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ABSTRACT

This guide is designed to provide essential background material about the College Board's Computerized Placement Tests (CPTs). It is recommended for administrators and staff alike. It contains the theory on which the tests are based, information concerning how to administer them, and discussions of the reports produced and how to interpret the data. The CPTs program is an assessment program based on computerized adaptive testing techniques. The methodology customizes tests according to the student's abilities, presenting the student with questions at an appropriate level for his or her abilities, knowledge, and background. Five areas are currently tested by CPTs (reading comprehension, sentence skills, arithmetic skills, elementary algebra skills, and college level mathematics). Seamless Serial Testing is a feature that allows automatic selection and administration of from one to three mathematics tests corresponding to the examinee's abilities. CPTs are a component of the ACCUPLACER student information management system. The following sections are included: (1) an introduction and overview; (2) a description of the tests; (3) test score interpretation; (4) a software overview; (5) reporting; (6) student information; (7) percentile ranks, standard errors of measurement, and tables of comparable scaled scores; (8) a glossary; and (9) an appendix of supplemental information. There are 35 tables. Selected sample test items and figures supplement the text. (SLD)

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COMPUTERIZED PLACEMENT TESTS™

COORDINATOR'S GUIDE

Program Overview
Version 3.0

TM017630

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COLLEGE BOARD

COMPUTERIZED PLACEMENT TESTS™

COORDINATOR'S GUIDE

Program Overview

Version 3.0

Including the College-Level Mathematics Test

and

Seamless Serial Testing™

June 1990

This Coordinator's Guide is designed to provide essential background material about the College Board's Computerized Placement Tests (CPTs). It is recommended for administrators and staff alike. It contains the theory upon which these tests are formulated, information about the procedures used to administer them, and discussions of the reports produced and how the data are interpreted. Reading this guide before reading the corresponding software manual, the CPTs User Manual, is highly recommended since understanding the CPTs will increase your success in using them.

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HOW TO USE THIS GUIDE

This guide is designed to provide you with an understanding of the Computerized Placement Tests (CPTs). Several sample screens will be displayed and briefly reviewed in this text, and you will be referred to the software manual, **CPTs User Manual, Installation and Operation, Version 3.0**, for detailed information. (Referred to hereafter as the CPTs User Manual.)

We recommend that you read this guide in its entirety, as well as the selected readings appearing in the separate publication, CPTs Version 3.0 Background Readings.

- The **INTRODUCTION**, beginning on page 3, briefly discusses CPTs, Computerized Placement Management Software (CPMS), and the Placement Research Service that may be used with CPTs. Accuplacer, an integrated system of the College Board, is also discussed.
- The **ABOUT THE TESTS** chapter, starting on page 9, provides in-depth information about the CPTs, including the theory behind them, local customization options, test specifications, sample questions, and other important data.
- The techniques used to interpret the results from CPTs, as well as the reliability and validity of these data, appear in the **TEST SCORES** chapter beginning on page 29.
- The **CPTs SOFTWARE OVERVIEW** chapter, which begins on page 39, highlights the installation, operation, and test administration features of the software.
- Details about the reporting capabilities of CPTs are presented in the **REPORTING** chapter beginning on page 53. Sample reports are also provided.
- The use of the separate **Student Guide** is briefly reviewed in the **STUDENT INFORMATION** chapter on page 61.
- Four **SCORES** chapters contain percentile ranks, standard errors of measurement, and tables of comparable scaled scores between CPTs and other assessment programs. These begin on page 63.
- A **GLOSSARY**, which begins on page 95, provides definitions of technical words used in this guide.

- Finally, the **APPENDIX**, which begins on page 99, contains a variety of important information such as the list of standard background questions, examples of locally defined background questions, and the layout of the CPTs reporting system.

Please also note the following:

- Chapter name, current topic, and page number appear at the top of each page.
- Chapter names in the text always appear in **bold** and uppercase.
- The ☞ symbol is used to specify important points or to highlight additional information.
- Text in **bold** is often used for emphasis. It is also used to indicate the contents of a screen item.
- The ▶ character to the left of an answer in a series indicates the correct answer for all sample questions in this guide.
- Any keys on the keyboard are enclosed in brackets, e.g., [Esc].
- Entries to be made in response to a screen item are shown in italics in the text, e.g., *Y*.
- CPTs is used as either a singular noun for the name of the software, or as a plural noun when referring to the tests themselves.
- You are provided with wide margins to facilitate note taking.

Should you have any recommendations for improving this guide, or any questions or problems regarding the CPTs software itself, we would appreciate your comments. Please contact us at:

College Board
Computerized Placement Tests
P.O. Box 6800
Princeton, New Jersey 08541-6800
(609) 734-5782 or (215) 750-8410

INTRODUCTION

Computerized Placement Tests

Computerized Placement Tests, CPTs, is an assessment program based on computerized adaptive testing techniques. This methodology customizes tests according to each student's abilities, presenting a student with a series of test questions at the appropriate level of difficulty for his or her abilities, knowledge, and background. Questions that are either too difficult or too easy are avoided, and accurate results are obtained with fewer questions administered with no time limit. These tests greatly benefit students in institutions where developmental courses are available. Testing by computer can also significantly increase the efficiency of the testing process, resulting in decreased costs and increased accuracy. This Coordinator's guide is intended for those who are interested in using CPTs. We advise you to read this guide before reading the CPTs User Manual or using any of the Computerized Placement Tests. It will provide you with a strong understanding of CPTs and better equip you for the actual mechanics of the testing procedure. We also strongly recommend the CPTs Version 3.0 Background Readings, published separately.

Five areas are currently tested by CPTs: Reading Comprehension, Sentence Skills, Arithmetic Skills, Elementary Algebra Skills, and College-Level Mathematics (CLM). **Seamless Serial Testing** is an innovative feature that allows you to have CPTs automatically select and administer from one to all three mathematics tests, corresponding to the test taker's mathematics background and abilities. This feature is discussed in detail later in this guide. In addition to the multiple-choice questions offered for all five test areas, the College-Level Mathematics test includes free-response questions that require the entry of numeric responses. (These free-response questions are undergoing field testing during 1990 and do not yet contribute to the CLM test scores.)

The CPTs are untimed and require little proctor intervention. Each test has from 12 to 20 scored questions, and usually takes about 15 to 20 minutes to complete. Based on user experience, a typical student takes from three to four tests, and spends a total of about 90 to 100 minutes on them. About half of this time is used by the student to complete the sign-on procedure, answer the background questions, go through the familiarization screens, and take the two verbal tests. The remainder of the time is usually spent on the mathematics tests. For example, a student with basic mathematics skills may take Reading Comprehension, Sentence Skills, Arithmetic Skills, and Elementary Algebra, while another student with more advanced mathematics skills may take the two verbal tests, Elementary

Algebra, and College-Level Mathematics. Yet another student may only need to to take the verbal tests and one of the mathematics tests — Elementary Algebra or College-Level Mathematics. The tests that are administered to students are determined solely by your institution. Initial questions are selected randomly from those of average difficulty. Subsequent questions are automatically selected based on the answers to the prior question(s). Student scores depend on the difficulty of the questions they answer correctly.

For institutions upgrading to CPTs Version 3.0, the System Installation and Uninstall procedures have been improved, and the Main Menu provides easy access to test administration parameters previously accessible only through the Installation/Setup procedures of Version 2.0. Other software enhancements provide for greater flexibility for interfacing with local institutional databases.

CPTs is one component of **Accuplacer™**, discussed below. Another component is the Computerized Placement Management Software, CPMS. Since CPMS is usually used to organize the test scores produced by CPTs, and to place students into courses using these data, a summary of this system is also presented below.

The relationship of CPTs Total Right Scores to percentile ranks, their standard errors of measurements, and the correspondence between CPTs scores and the original Descriptive Tests of Language and Mathematics Scores (DTLS/DTMS) and the New Jersey College Basic Skills Placement Test (NJCBSPT), are also included in this guide.

Inspection Sets of the CPTs are available upon request for a nominal handling fee that is credited toward your first full order of CPTs. If you are working with an Inspection Set, please read the **Special notes about Inspection Sets** in the **APPENDIX** of the CPTs User Manual before trying to install and operate it. For additional information on Inspection Sets, please contact CPTs at the address and telephone number on the bottom of page 2.

Computerized Placement Management Software

Computerized Placement Management Software, CPMS, Version 3.0, is a system for organizing test data and other information about your students and recommending their placement into courses best suited for them. It also tracks student progress and maintains their records.

The criteria, or "rules," for course placement are created by your institution, giving you complete control over the variables used to recommend students for courses. These rules can be the same for all students or may vary depending on the major field of study. You can place students into as many as three courses within six areas of study, including English, reading, mathematics, and three other areas

defined by you. Placement is based on test scores from CPTs, background information, supplementary information such as high school record, and intended major field of study. A typical rule might be to place students into Mathematics 101 if their Arithmetic score is less than 45 or their Algebra score is less than 32. Similarly, rules can base placement, in part, on answers to background questions. These rules can be as simple or as complex as desired and can even include weighted combinations. For example, a rule might recommend placement into Mathematics 101 if the student studied mathematics for less than two years in high school (as indicated in standard background question number two) and if three times the Arithmetic score plus twice the Algebra score is less than 180.

CPMS obtains its data from various sources. CPTs test scores and responses to background questions are entered directly from the CPTs software. Major codes and standard background questions are provided; however, you can modify these or create your own. Placement rules, courses, supplementary information (such as scores on tests other than the CPTs), advisement text, and advisor codes are created using the keyboard. Data obtained from CPTs, such as test scores and answers to background questions, and the questions themselves, also can be changed using CPMS.

Besides accepting CPTs data, CPMS allows you to define courses, major fields of study, advisors, placement rules, and more. You can also create data disks that the College Board's Placement Research Service will use to provide research analysis for your institution and to confirm or modify placement rules for your next placement cycle.* The relationship between student placement test scores and their college course grades will help you determine the validity of your current assessment and placement policies. Of course, the goal is not only to correctly place students, but also to save considerable administrative time and to process student information more efficiently.

CPMS features individual student and roster reporting options. You can select the students appearing on reports either by date of testing or by the range of their names or IDs. You can also request sorting by name or ID. Available reports include course assignment listings, test scores, data based on variables you specify, and others. The reports can be printed or displayed on your screen.

* A separate publication on how to prepare data disks for PRS analysis is available at no charge from CPTs. (See page 2 for address.)

Placement Research Service

Placement Research Service, PRS, is another component of Accuplacer used in evaluating the effectiveness of placement tests and other predictors of performance in English, mathematics, reading, and other courses. Placement test scores are compared with the grades from entry-level college courses. PRS then generates various statistical reports to assist you in the following: validating your use of test scores to place students into entry-level courses; reviewing and revising your placement policies; advising students of course placement alternatives; identifying strengths and weaknesses in curriculum; supporting remedial and retention efforts; and monitoring student progress and success. PRS is flexible, allowing you to specify the analyses you need by defining groups, subgroups, and detailed score distributions to provide local norms for each predictor. Each report contains a separate section for each student group studied and a detailed explanation for each type of table. Both CPTs and CPMS, reviewed above, are compatible with PRS.

Data for PRS can be supplied manually or by using magnetic media. As many as seven measures of academic success for each student can be predicted, including grade-point averages, mathematics and English course grades, and others of your choice. Up to nine test scores or other items used for predicting academic success can be studied, including reading, writing, and mathematics test scores, high school grades, and teacher recommendations. In addition to the total group, as many as six subgroups of students can be identified for separate analysis. These categories may include ethnic minorities, commuting students, adults, or any other pertinent group. PRS reports include two-way tables, expectancy tables, and prediction equations. All results are compatible with almost all standard assessment and placement testing instruments. The PRS is included in the CPTs Level I Annual Participation Fee.

Accuplacer

Accuplacer integrates CPTs, CPMS, and PRS, all of which have been reviewed above. It allows you to fully manage student information and to accurately place entry-level students. All three components can be used together to effectively manage the large volume of data accompanying your incoming students. CPTs and CPMS are menu driven and provide many help screens to minimize the need to reference the user manuals. The software is designed to run on IBM or compatible microcomputers.

A fourth component of Accuplacer, the **School to College Placement Articulation Software Service,** PASS, is currently being developed and field tested. PASS gives high school students an opportunity to take the CPTs as early as the tenth grade. This option provides them, their counselors, and their teachers with information about their current performance levels in light of their anticipated major field of study, career, and choice of college. This information also assists students in making curriculum choices while in high school, and enables them to strengthen their academic skills—especially where they are deficient—thereby reducing the need for remediation after entering college.

Assistance Hotline

If you have questions about any aspect of the **Computerized Placement Tests,** not answered by this guide or by the CPTs User Manual, please call the assistance hotline at:

(609) 734-5782
or
(215) 750-8410

The hotline is open on weekdays between 9:00 a.m. and 4:30 p.m. EST.

If your inquiry is hardware or software related, please be at your computer and have the following information available when phoning:

- Your name, telephone number, and institution
- The exact sequence of events when the problem was encountered
- Any messages displayed on the screen at that time
- Computer make and model
- Type and amount of disk storage
- Amount of internal memory (RAM)
- Type of monitor and graphics board
- DOS version number
- Printer make and model
- Network (if applicable)
- CPTs Version (e.g., 3.0 or 2.0) and serial number

ABOUT THE TESTS

This chapter describes how to use Computerized Placement Tests in your institution, how to begin their implementation, and the theory behind test operation. It also reviews each test in detail, providing sample questions and a chart for each of the five tests. Information on test administration, reporting, and score interpretation are provided in following chapters.

To determine if the CPTs can fulfill your institutional testing needs, you may consider requesting an Inspection Set of software as explained on page 4. We suggest that you use this software and study the guides provided. By having students actually take the CPTs, you can measure their reactions and performance. Experience has shown that students adapt readily to computerized testing and react positively to the process. To participate in the College Board Computerized Placement Tests program, complete a CPTs Participation Form and return it to the address shown.

The CPTs can be tailored to suit your requirements. The testing schedule will depend on the unique needs of your institution. Dates of admission, campus visits, orientation periods, and availability of computer hardware are all factors that must be carefully considered for a successful program. Experimenting with the Inspection Set of CPTs will help you in making these determinations. CPTs are useful not only in placing students into various courses, but also in determining progress over a period of time and in end-of-course testing (posttesting).

Use of CPTs

The primary function of CPTs is to determine which course placements are appropriate for students and whether or not remedial studies are needed. Over a period of time, CPTs can also be used to monitor student in-course progress and to suggest whether remediation is still needed or if a change in course assignments is recommended. This information may be supplied to the student or to the academic advisor or faculty member to help monitor progress. Because of the "adaptive" nature of the tests, the questions presented on successive tests will vary, thereby greatly reducing the effects of repeated practice on the tests. The elimination of repeated questions will be even more marked as time passes and the student's skills change. We refer you to the article in the separate publication, CPTs Version 3.0 Background Readings, entitled **Test-Retest Results**.

Adaptive Testing

CPTs, a model of adaptive testing, are customized for each student. Adaptive testing means that the sequence of test questions presented to each student and the questions themselves will vary because they are based on responses to prior test questions. The same student taking the same test twice in succession will almost always receive different questions. Each question is automatically chosen to yield the most information about the examinee, based on the skill level indicated by answers to the prior questions. Although few questions are presented for each test, great accuracy is maintained. This process achieves several positive results. Students are tested quickly and are not frustrated or bored by questions that are too easy or too hard. The difficulty of the questions is quickly and automatically adapted to the capability of the individual student. Thus, challenging tests corresponding to each student's skill level are always provided. Because of the untimed nature of the tests, students may work at their own pace. Both student and administration can benefit since test results may be displayed immediately. Test administrators and guidance staff also benefit from immediately available scores, greatly reduced test security problems, and decreased paperwork.

Adaptive testing is possible because of its underlying measurement theory, item response theory, and the availability of modern microcomputers. Item response theory describes a test question according to three characteristics: its difficulty, its discrimination, and the probability that an examinee who does not know the answer can guess it correctly. A calculation based on these three characteristics yields a fourth characteristic, that is, the expected information that the question will provide if administered to an examinee at a given level of skills. By starting with a question of middle difficulty, and following it with either a very easy or very difficult question, it is likely that the examinee will quickly answer at least one question correctly and one incorrectly. This process is necessary to begin to zero-in on the appropriate level of difficulty for the examinee.

The first question in a particular test is of average difficulty and is chosen randomly from several "starter" questions of the same level of difficulty. An incorrect answer will result in the next question being chosen from a group of easier questions. Similarly, a correct answer will cause the next question to be somewhat more difficult. This process is repeated until it results in a relatively small number of questions that accurately assess the student's capabilities. The software ensures that each student is presented with a variety of questions. In the Reading Comprehension test, for example, each student will receive four long reading passages, eight to nine questions based on short passages, and four to five questions involving sentence relationships.

CPTs continues this process by choosing, at each point in the test, that next question which is expected to yield the most information about an examinee, given what is known about his or her skills. As the test proceeds, an estimate of the student's skills is made after every question, based on all the information available to that point. The estimate is used to look up, in a table included in the software, what question will next provide the most information. That question is then administered and the procedure repeated until the end of the test. To assure that the test is balanced in content, and that the kinds of questions presented do not differ greatly from one student to another, except in difficulty, a number of constraints are built into the table. These constraints guide the selection of questions to be administered so that this balance will be achieved regardless of the skill level of the individual.

Customizing CPTs

The standard set of CPTs has five test components: Reading Comprehension, Sentence Skills, Arithmetic, Elementary Algebra, and College-Level Mathematics. Each of these tests is discussed in detail later in this chapter. The sequence in which these tests are administered to students, or if a given test is even to be presented, can be determined by the test administrator.

The first mathematics test can either be specified or based on the student's answers to three background questions. (See page 101 in the **APPENDIX** for the rules used by the system in the latter case.) The student may also be permitted to select the first mathematics test. The order in which mathematics tests are administered can be customized by specifying a fixed sequence. Alternately, branching criteria can be used whereby subsequent mathematics tests are given based on the minimum and maximum scores achieved on the current test. These capabilities are called **Seamless Serial Testing**, which is explained below. Seamless Serial Testing is an integrated feature of the CPTs Version 3.0 software.

A set of 10 standard background questions is supplied with the system. When the system is configured, the test administrator specifies whether or not these questions are to be asked during the testing procedure. These background questions are used for a variety of purposes. For example, they may be used in the CPMS to recommend placement into courses. They also supply basic information for research purposes. The answers to these questions may be printed on student reports, if desired.

We recommend including the background questions in your use of CPTs since they can contribute to research on the relationships between these responses, test performance, and academic achievement. You may request modifications to the 10 standard questions, or have us add one or more local questions of your

choosing up to a total of 20 questions. This process includes replacing one or more of the standard questions. The stem of each local question can be up to 40 characters in length, including spaces. All background questions may have up to 10 options (answers). Each option can be up to 46 characters in length, including spaces. The last option for each question must be **omit**. If you use other than the standard questions, you must supply us with a typed copy of the questions and options so that they can be included with your CPTs shipment. (An additional fee will be charged for this service. See the Participation Form for details.) The standard background questions and examples of locally defined background questions appear in the **APPENDIX** on pages 106-109.

Two standard lists of Major Codes may be used with CPTs. **CGP** major codes are normally used by colleges with programs leading to an associate degree. **SDQ** codes are typically used by institutions having programs of study leading to the bachelor's degree. **You may also use your own list of major codes, or add additional codes to the CGP or SDQ lists**. These lists are included in the CPTs User Manual.

Reading Comprehension Test

Each student taking this test will be presented with a series of 17 questions of two primary types. The first type consists of a **reading passage** followed by a question based on the text. Both short and long narratives are provided. The reading passages can also be classified according to the kind of information processing required, including explicit statements related to the main idea, explicit statement related to a secondary idea, application, and inference. The second type of question, **sentence relationships**, presents two sentences followed by a question regarding the relationship between these two sentences. It may ask, for example, if the statement in the second sentence supports that in the first, if it contradicts it, or if it repeats the same information. Both reading passages and sentence relationship questions are also varied according to content categories to help prevent bias because of a student's particular knowledge. These categories include social sciences, natural and physical sciences, human relations and practical affairs, and the arts. An example of each of these question types is shown below. In the Reading Comprehension test, for example, each student will receive four long reading passages, eight to nine questions based on short passages, and four to five questions involving sentence relationships. The ▶ character indicates the correct answer among the possible responses for all the multiple-choice sample questions that follow. The Reading Passage and Sentence Relationships questions are preceded with the statement: **This test measures your ability to understand what you read.**

Reading Passage

Read the statement or passage and then choose the best answer to the question. Answer the question on the basis of what is stated or implied in the statement or passage.

Myths are stories, the products of fertile imagination, sometimes simple, often containing profound truths. They are not meant to be taken too literally. Details may sometimes appear childish, but most myths express a culture's most serious beliefs about human beings, eternity, and God.

The main idea of this passage is that myths

are created primarily to entertain young children.

are purposely written for the reader who lacks imagination.

provide the reader with a means of escape from reality.

▶ illustrate the values that are considered important to a society.

Sentence Relationships

Two underlined sentences are followed by a question or statement about them. Read each pair of sentences and then choose the best answer to the question or the best completion of the statement.

The Midwest is experiencing its worst drought in fifteen years.

Corn and soybean prices are expected to be very high this year.

What does the second sentence do?

It restates the idea found in the first.

▶ It states an effect.

It gives an example.

It analyzes the statement made in the first.

Sentence Skills Test

Each student receives 17 Sentence Skills questions of two types. The first type is **sentence correction** questions, which require an understanding of sentence structure. These questions ask students to choose the most appropriate word or phrase to substitute for the underlined portion of the sentence. The second type is **construction shift** questions. These ask that a sentence be rewritten according to the criteria shown while maintaining essentially the same meaning as the original question. Within these two primary categories, the questions are also classified according to the skills being tested. Some questions deal with the logic of the sentence, others with whether or not the answer is a complete sentence, and still others with the relationship between coordination and subordination. In a manner similar to Reading Comprehension questions, these questions are varied according to categories to prevent bias because of a student's particular knowledge. These categories include social sciences, natural and physical sciences, human relations and practical affairs, and the arts. The following two questions illustrate this type of test. The sentence correction and construction shift questions are preceded by the statement: **This test measures your understanding of sentence structure — of how sentences are put together and what makes a sentence complete and clear.**

Sentence Correction

Select the best version of the underlined part of the sentence. The first choice is the same as the original. If you think the original sentence is best, choose the first one.

Ms. Rose planning to teach a course in biology next summer.

planning
are planning
with a plan
▶ plans

Construction Shift

Rewrite the sentence in your head. You will be told how to begin your new sentence. Your new sentence should be well written and should have essentially the same meaning as the sentence given you.

Being a female jockey, she was often interviewed.

Rewrite, beginning with

She was often interviewed . . .

The next words will be

on account of she was

by her being

▶ because she was

being as she was

Arithmetic Test

The 16 arithmetic questions administered by the CPTs are divided into three types. The first involves **operations with whole numbers and fractions**. Topics included in this category are addition, subtraction, multiplication, division, recognizing equivalent fractions and mixed numbers, and estimating. Another type involves **operations with decimals and percents**, including addition, subtraction, multiplication, and division with decimals. Percent problems, recognition of decimals, fraction and percent equivalences, and estimating problems are also given. The final type involves **applications and problem solving**, which includes rate, percent, and measurement problems, simple geometry problems, and distribution of a quantity into its fractional parts. Questions from all three categories are always presented to the student, although the number of questions from each category varies with his or her skill level. For example, if the student's responses show minimal arithmetic skills, presenting too many applications problems is pointless. On the other hand, a student exhibiting good skills with whole numbers and fractions will not be presented with too many of these types of problems. Thus, the proportion of questions in the various categories will automatically vary according to the student's responses. In this sense, this test and the other CPTs are truly adaptive in nature. The following directions and questions illustrate the Arithmetic test:

This test measures your ability to perform basic arithmetic operations and to solve problems that involve fundamental arithmetic concepts.

Solve the following problems and choose your answer from the alternatives given. You may use the paper you have been given for scratchwork.

All of the following are ways to write 20 percent of N EXCEPT

$0.20N$

$\frac{20}{100}N$

$\frac{1}{5}$N

▶ $20\,N$

Which of the following is closest to $\sqrt{10.5}$?

▶ 3

4

5

8

Three people who work full time are to work together on a project, but their total time on the project is to be equivalent to that of only one person working full time. If one of the people is budgeted for 1/2 of his time to the project and a second person for 1/3 of her time, what part of the third worker's time should be budgeted to this project?

$\frac{1}{3}$

$\frac{1}{4}$

▶ $\frac{1}{6}$

$\frac{1}{8}$

Elementary Algebra Test

A total of 12 questions, divided into three types, are administered in this test. The first type is **operations with integers and rational numbers**, and includes computation with integers and negative rationals, the use of absolute values, and ordering. These questions test minimal skill levels of the student. A second type involves **operations with algebraic expressions**, and tests minimal skill levels using evaluation of simple formulas and expressions, and adding and subtracting monomials and polynomials. At all levels of skill, questions are provided involving multiplying and dividing monomials and polynomials, the evaluation of positive rational roots and exponents, simplifying algebraic fractions, and factoring. The third type involves the solution of **equations, inequalities, and word problems**. As with the Arithmetic test, few questions from this category are presented to the student unless he or she shows skill in this area. When a high degree of competence is indicated, questions from this category include solving linear equations and inequalities, the solution of quadratic equations by factoring, solving verbal problems presented in an algebraic context, including geometric reasoning and graphing, and the translation of written phrases into algebraic expressions. Some of these skills are illustrated in the sample questions following these instructions:

> This test measures your ability to perform basic algebraic operations and to solve problems that involve elementary algebraic concepts.
>
> Solve the following problems and choose your answer from the alternatives given. You may use the paper you have been given for scratchwork.
>
> If a number is divided by 4 and then 3 is subtracted, the result is 0. What is the number?
>
> ▶ 12
>
> 4
>
> 3
>
> 2
>
> $16x - 8 =$
>
> $8x$
>
> $8(2x-x)$
>
> ▶ $8(2x-1)$
>
> $8(2x-8)$

If $x^2 - x - 6 = 0$, then x is

▶ -2 or 3

-1 or 6

1 or -6

2 or -3

College-Level Mathematics Test

The College-Level Mathematics test, CLM, assesses proficiency in intermediate algebra through precalculus. This test therefore enables institutions to place students into intermediate algebra, college algebra, precalculus, and introductory calculus courses. In addition to the typical multiple-choice questions, the CLM test includes **free-response** questions.* Instead of identifying a correct option for a multiple choice question, these questions require students to enter the actual numeric answer.

There are 20 scored** questions administered in this test, representing six general categories. **Algebraic operations** include simplification of rational algebraic expressions, factoring and expanding polynomials, and manipulating roots and exponents. The **solution of equations and inequalities** category includes the solution of linear and quadratic equations and inequalities, systems of equations, and other algebraic equations. The category of **coordinate geometry** presents questions involving plane geometry, the coordinate plane, straight lines, conics, sets of points in the plane, and graphs of algebraic functions. The **applications and other algebra topics** category contains complex numbers, series and sequences, determinants, permutations and combinations, factorials, and word problems. The category of **functions** includes questions involving polynomial, algebraic, exponential, and logarithmic functions. The **trigonometry** category includes trigonometric functions. Sample CLM test questions appear after the test directions below:

* The initial release of the CLM test includes free-response and multiple-choice questions that are undergoing field testing and do not contribute to the test score. When sufficient data have been collected, the test will be revised to include some of these questions in generating sores.

** The initial release of the CLM test includes 10 unscored questions that are administered in addition to the 20 scored questions. These unscored questions are included for pretesting and equating purposes.

The College-Level Mathematics test measures your ability to solve problems that involve mathematical skills and concepts important for success in college-level mathematics courses.

Solve the following problems. Some of the questions require you to choose from the alternatives given. Other questions will require you to type in an answer. Your answers must be typed as numerals (12), NOT as words (twelve). All figures in this test are drawn as accurately as possible, given the limits of the equipment being used. You may use the paper you have been given for scratchwork

If $f(x) = x^4 - x + 2$, then $f(-x) =$

$x^4 - x$

$x^4 + x$

$x^4 - x + 2$

▶ $x^4 + x + 2$

$x^4 + x - 2$

The equation $x^2 + 2ix - 4 = 0$ has as its roots

$\sqrt{5} - 1,\ -\sqrt{5} - 1$

$\sqrt{5} - i,\ \sqrt{5} + i$

$\sqrt{3} - i, -\sqrt{5} + i$

$\sqrt{3} - i, \sqrt{3} + i$

▶ $\sqrt{3} - i, -\sqrt{3} - i$

In triangle ABC, $a = 12$, $b = 16$, and $\sin B = \frac{2}{3}$. What is the measure of angle A in degrees?

Enter answer here: *30*

Seamless Serial Testing

Seamless Serial Testing provides options for the administration of the three mathematics tests. The test administrator may select from several options that will automatically direct the system to perform the indicated function. A screen containing these options appears when **Set Math Delivery Options** is selected from the System Configuration Menu. This screen is shown below. It is reviewed briefly here and in detail in the CPTs User Manual. The available options are discussed following the screen.

Set Mathematics Administration Options

Enter the maximum number of math tests per examinee session: 3

Examinee starts mathematics:

With a Specific Test ( )
Based on Background (■)
Based on Examinee Choice ( )

Branching Criteria:

	Low	High
Arithmetic	—	>63
Elementary Algebra	< 32	>73
College Level Math	<43	—

Examinee continues mathematics:

Using a Fixed Sequence ( )
Using Branching Criteria (■)

Fixed Sequence:

Arithmetic	[1]
Elementary Algebra	[2]
College-Level Math	[3]

Press <F10> to save. Press <ESC> to return to CPTs Configuration Menu

Enter the maximum number of math tests per examinee session

This option allows you to indicate the maximum number of mathematics tests to be given during the student's testing session. It can be set at *1*, *2*, or *3*. This value is usually contingent on the time available for testing. If there are no time restrictions, *3* is usually selected (shown in the sample screen above).

Select First Mathematics Test
(Examinee starts mathematics)

You may choose which of the three mathematics tests will be administered first. There are three ways of doing this as shown on the sample screen:

With a Specific Test

Choose this option to administer a given test first. The actual test sequence is selected using the **Fixed Sequence** items shown on the sample screen.

Based on Background

The first mathematics test administered by the system can be automatically selected based on answers to three of the standard background questions supplied with the system. This choice is illustrated in the sample screen by (■) after **Based on Background**. These questions determine **years of high-school mathematics taken, study of algebra in high school,** and **years since last studied mathematics.** The system will choose the first test based on answers to these questions and preestablished rules, which appear on page 101. (The background questions, with possible answers, appear in the **APPENDIX** beginning on page 100.) Note that to use this feature of CPTs, these three standard background questions must be administered in their standard sequence (i.e. 2nd, 3rd, 4th).

Based on Examinee Choice

If you choose this option in the sample screen, the student will be presented with the following question: **Which mathematics test do you want to take?** The student then must select the desired test from the following entries: **Arithmetic**, **Elementary Algebra**, and **College-Level Mathematics.** Their choice of test will then be administered first.

Select Subsequent Mathematics Test(s)
(Examinee continues mathematics)

You may have CPTs decide how the mathematics testing is to continue after the first test is administered. There are two ways to do this:

Using a Fixed Sequence

By selecting this option on the screen, you can have CPTs administer the tests in the same sequence to all students. You can select this option only if **With a Specific Test** was previously chosen to start mathematics. The sequence of the tests is specified by placing the numbers *1*, *2*, and *3* next to the tests listed under **Fixed Sequence** on the screen. Place an *X* next to any test to indicate that it should not be administered. Whether one, two, or three tests are given is based on your entry for **Enter the maximum number of math tests per examinee session.**

Using Branching Criteria

You may have CPTs continue mathematics testing based on a branching criterion (cut score) you specify. Default values, which you may modify as desired, are provided with the system. The system checks these values to determine the sequence in which the mathematics tests are to be administered. These branching criteria are useful when a student's scores are very low or very high. If a student obtains a very high score on the Elementary Algebra test, for example, administration of Arithmetic as the next test would not provide as good an indication of that student's abilities as would the College-Level Mathematics test. If a student obtains a very low score on the Elementary Algebra test, administration of the Arithmetic test would be a better alternative. A student's score on the Elementary Algebra test could also result in no other mathematics test being administered. CPTs makes these decisions based on your branching criteria and does not require any manual intervention during the administration of the tests.

To illustrate this concept, the branching criteria from the sample screen are repeated below. These scores are also the default criteria supplied with the system.

	Low	High
Arithmetic	——	>63
Elementary Algebra	<32	>73
College Level Math	<43	——

CPTs interprets this information as follows:

- A score greater than *63* on the Arithmetic test will cause the Elementary Algebra test to be given next.
- A score less than *32* on the Elementary Algebra test will cause the Arithmetic test to be given next.
- A score greater than *73* on the Elementary Algebra test will cause the College-Level Mathematics test to be given next.
- A score less than *43* on the College-Level Mathematics test will cause the Elementary Algebra test to be given next.

☞Each of these determinations is made individually for each test. For example, whichever test is given first (by selecting **With a Specific Test**, **Based on Background**, or **Based on Examinee Choice**), CPTs will examine the score using the branching criteria. If Elementary Algebra is given first, CPTs will choose Arithmetic next if the score is less than *32*, or College-Level Mathematics if the score is greater than *73*. This process is limited by the maximum number of mathematics tests chosen. If this value is *1*, this feature of Seamless Serial Testing cannot be invoked. If the maximum number of mathematics tests is *2*, branching will be used only for the second test.

☞From the **System Configuration Menu**, you may select the **Set Test Delivery Options** item. These options are fully discussed in the **CPTs SOFTWARE OVERVIEW** chapter beginning on page 39. On this screen, you may indicate the maximum number of tests per examinee session, <u>including</u> the mathematics tests. This number may limit how frequently branching criteria are applied. For example, if the maximum of <u>all</u> tests is set to *3*, and the Reading Comprehension and Sentence Skills tests have already been administered, branching criteria cannot be invoked after the first mathematics test.

Computerized Placement Tests Summary

The following charts summarize the Computerized Placement Tests. Information on each of the five tests, including types of questions, content categories and skills, and the quantity of each, is presented.

<table>
<tr><th colspan="2">Reading Comprehension (17 Questions)</th></tr>
<tr><th>Types of Questions</th><th>Content Categories/Skills</th></tr>
<tr><td>Reading passages

(4 questions, passages more than 75 words)

(8-9 questions, passages 75 words or less)</td><td rowspan="2">The arts (2-3 questions)

Human relations and practical affairs (3-5 questions)

Social sciences (4-6 questions)

Natural and physical sciences (4-6 questions)</td></tr>
<tr><td>Sentence relationships

(4-5 questions)</td></tr>
<tr><td colspan="2">Reading Passages Notes: These questions are classified according to the kind of information processing required, as follows: explicit statement related to the main idea, explicit statement related to a secondary idea, inference, and application. Two to four questions of each are given.</td></tr>
</table>

<table>
<tr><th colspan="2">Sentence Skills (17 Questions)</th></tr>
<tr><th>Types of Questions</th><th>Content Categories/Skills</th></tr>
<tr><td>Sentence correction

(8 questions)</td><td rowspan="2">Skills tested: Understanding sentence structure, relationships between coordination and subordination, and sentence logic. Each student answers about equal numbers of questions involving these skills.

Content: The arts, human relations, practical affairs, social sciences, natural and physical sciences.</td></tr>
<tr><td>Construction shift

(9 questions)</td></tr>
</table>

Arithmetic (16 Questions)	
Types of Questions	**Content Categories/Skills**
Operations with whole numbers and fractions	Fractions and mixed numbers: adding, subtracting, multiplying, dividing, recognizing equivalents, estimating.
Operations with decimals and percents	Decimals: adding, subtracting, multiplying, dividing. Percent problems, recognizing decimal and fraction and percent equivalences, estimating.
Applications and problem solving	Rate and percent problems, distributing a quantity into fractional parts, measurement problems, simple geometry problems.
Arithmetic Notes: A student with low skills receives an average of seven questions involving operations with whole numbers and fractions, seven questions involving operations with decimals and percents, and two questions involving applications and problem solving. The proportion of questions in the first through third categories shifts progressively as the skill levels increase. For highly skilled students, the number of questions in each category averages three, seven, and six, respectively.	

Elementary Algebra (12 Questions)	
Types of Questions	**Content Categories/Skills**
Operations with integers and rationals	Computing with integers and negative rationals, ordering, absolute values.
Operations with algebraic expressions	Evaluating simple formulas and expressions, adding, subtracting, multiplying and dividing monomials and polynomials, evaluating positive rational roots and exponents, factoring, simplifying algebraic fractions.
Solution of equations, inequalities, and word problems	Solving linear equations and inequalities, solving systems of linear equations, solving quadratic equations by factoring, translating written phrases into algebraic expressions, solving verbal problems in an algebraic context including geometric reasoning, graphing.
Elementary Algebra Notes: The number of questions for Operations with integers and rationals is three to four for those of minimal skill level and even fewer for those moderately skilled in elementary algebra. The Operations with algebraic expressions category includes several topics appropriate only for the least skilled student, such as evaluation of simple formulas and expressions as well as adding and subtracting monomials and polynomials. Other topics shown in the chart for this category are administered to students across all levels of performance. Students scoring near the low end of the scale receive six to seven questions from these topics and those scoring near the top of the scale receive five questions. The category of Solution of equations, inequalities, and word problems are primarily for students with high skill levels. Those with minimal skills receive only one or two of these questions. The most able students receive up to six questions from those topics shown in the chart. These problems provide the most discriminating questions for students who are more competent in elementary algebra.	

College-Level Mathematics (20 Questions)	
Types of Questions	**Content Categories/Skills**
Algebraic Operations	Simplifying rational algebraic expressions, factoring and expanding polynomials, manipulating roots and exponents.
Solution of Equations and Inequalities	Solving linear and quadratic equations and inequalities, systems of equations, and other algebraic equations.
Coordinate Geometry	Plane geometry, the coordinate plane, straight lines, conics, sets of points in the plane, graphs of algebraic functions.
Applications and other algebra topics	Word problems, complex numbers, series and sequences, determinant, permutations and combinations, factorials.
Functions	Polynomial, algebraic, exponential, logarithmic functions.
Trigonometry	Trigonometric functions
College-Level Mathematics Notes: In addition to the 20 scored questions, the initial CLM test includes a total of 10 free-response and multiple-choice questions that are undergoing field testing and do not contribute to the test score. When sufficient data have been collected, the test will be revised to include these questions in generating scores.	

☞ Periodically, the number of questions in the various CPTs may be increased for pretesting purposes to refresh the item pool.

TEST SCORES

Definition of Scores

As you review the sample reports presented in the **REPORTING** chapter beginning on page 53, you will note three kinds of scores generated by CPTs:

- Total Right Score
- Range
- Percentile Rank

The **Total Right Score*** indicates student performance with respect to all of the questions in the pool from which a test was drawn. For example, while the pool making up each of the five tests contains 120 questions, a student might be given 20 questions and answer 14 correctly. The total right score on this test is then calculated using a formula. If the total right score is 85, for example, this would mean that if the student was given all 120 questions, 85 would have been answered correctly. This score thus provides an absolute measure of the student's skills, independent of the distribution of skills among all test takers. This is the score you should use in computing summary statistics, in correlating test performance with other information in a student's records, and in other statistical treatments of the test data.

The **Range** indicates the accuracy of the score attained. It is the confidence interval and is equal to the student's total right score plus or minus one standard error of measurement (SEM). The SEM corresponding to a particular score shows the accuracy of the test in assessing students at that level of skills. The narrower the range, the more confident you can be that the student's skills have been accurately measured. Statistically, two-thirds of the examinees will have true levels within the range shown.**

* Called Estimated Number Right True Score by statisticians.

** Tables of CPTs scores and their respective SEMs begin on page 71.

The **Percentile Rank** indicates student performance in relation to a normative sample of test takers. For the College-Level Mathematics test, student performance is compared to a normative sample of college students who took a College Level Examination Program (CLEP) mathematics subject area test to obtain college credit. For the four original CPTs (Reading Comprehension, Sentence Skills, Arithmetic, and Elementary Algebra), student performance is compared with that of a representative sample of entering college students participating in a New Jersey statewide assessment of basic skills. A percentile rank of 75 means that the student's score is greater than 75 percent of the normative sample. Scores on each of the test modules, except the College-Level Mathematics test, were compared to those on the corresponding section of the New Jersey College Basic Skills Placement Test. For the College-Level Mathematics test, a simulation study was conducted on 3,000 students from the CLEP mathematics sample to obtain approximate normative data. Tables were then prepared showing each possible score on the adaptive test as a percentile in the distribution of scores obtained by these samples.

The total right score is used in all three reports (Individual Student Report, Roster Report, and Summary Report). The range and percentile rank appear only in the Individual Report. The Summary Report lists the mean score and standard deviation for all students in each of the test categories.

Interpretation and Placement

The interpretation of test scores is one of several factors to consider in placing students into regular or remedial courses. Since placement criteria for your institution are unique, it is not possible for the College Board to provide you with definitive rules to use in your interpretation of scores and placement of students. Still, we can assist you in various ways. Most important, you should be sure that the technique you use to analyze test scores is compatible with adaptive tests. (Some methods are valid only for tests in which all students answer the same questions, and this is not the case with CPTs.)

We highly recommend a publication available from Educational Testing Service entitled **Passing Scores**.* This guide describes in detail several methods for setting cut scores. Two of these, **methods based on judgements about individual test takers**, and **methods based on judgements about a group of test takers**, offer possibilities you should consider. The remaining methods discussed

* Order through ETS, Publications Order Services, P.O Box 6108, Princeton, NJ 08541-6108. Please enclose a check for $7.50 or an institutional purchase order.

are not easily applicable to adaptive tests since they assume that all students answer the same questions.

Your institution's existing placement practices are most likely an excellent starting point for setting cut scores. Evaluation of students' grades, proportion of students receiving remediation, and many other factors may be considered. Based on these decisions, you can set CPTs cut scores to meet your requirements. These scores can then be modified with time as you gain confidence in the ability of CPTs to increase the accuracy of your placements, and as you evaluate the reports generated from your use of the Placement Research Service (PRS).

The policies of other institutions of higher education are another source of information that may be useful in setting cut scores for placement decisions. The New Jersey Department of Higher Education (NJDHE) has specified "proficiency categories" in Computation (Arithmetic) and Elementary Algebra. These categories have been defined in terms of scores on the New Jersey College Basic Skills Placement Test (NJCBSPT). The score comparability study, which was the basis for the table beginning on page 85, compares scores on this test to scores on the CPTs, making it possible to find scores on the CPTs Arithmetic and Elementary Algebra test that correspond to the NJDHE categories in these areas. The table below shows these scores.

Proficiency Category	NJCBSPT Scaled Scores	CPTs Scaled Scores
Computation (Arithmetic)		
"Appear to be proficient"	173 or higher	92 or higher
"Lack proficiency in some areas"	165-172	68-91
"Lack proficiency"	164 or less	67 or less
Elementary Algebra		
"Appear to be proficient"	183 or higher	103 or higher
"Lack proficiency in some areas"	167-182	62-102
"Lack proficiency"	166 or less	61 or less

Course Placement Suggestions

Verbal

A total right score of about 80 in the Reading Comprehension test is typically required for exemption from a remedial reading course or for placement into a college-level reading course. A total right score of about 80 in the Sentence Skills test is usually required to qualify for placement into college-writing courses such as English Composition I and Freshman Composition. Your institution's cut scores might vary considerably for each of these tests.

Mathematics

The **College-Level Mathematics** test is the newest addition to CPTs. To assist you in making placement decisions into college-level mathematics courses, we have identified five different score levels using percentiles from the CLEP normative sample. These are summarized below:

- **Below 20th Percentile**:
  - **Recommendation**: This percentile corresponds to a total right score of about 40 or less. These students should take the Elementary Algebra test before any placement decisions are finalized.

- **20th Percentile**:
  - **Proficiencies**: This percentile corresponds to a total right score of about 40. These students can identify common factors, factor binomials and trinomials, and manipulate factors to simplify complex fractions.
  - **Recommendation**: These students should be considered for placement into Intermediate Algebra. Additional results can be obtained by having the students take the Elementary Algebra test.

- **50th Percentile**:
  - **Proficiencies**: This percentile corresponds to a total right score of about 63. These students can work with algebraic expressions involving real number exponents, factor polynomial expressions, and simplify and perform arithmetic operations with rational expressions, including complex fractions. They can solve and graph linear equations and inequalities, solve absolute value

equations, solve quadratic equations by factoring, and graph simple parabolas. They also have a basic understanding of function notation, such as determining the value of a function for a specific number in the domain. However, they show a limited understanding of the concept of function on a more sophisticated level, such as determining the value of the composition of two functions. They present a rudimentary understanding of coordinate geometry and trigonometry.

- **Recommendation**: Placement into college algebra or a credit-bearing course immediately preceding calculus should be considered.

- **80th Percentile**:
  - **Proficiencies**: This percentile corresponds to a total right score of about 86. These students have an understanding of polynomial functions, and can evaluate and simplify expressions involving functional notation, including composition of functions. They can also solve simple equations involving trigonometric, logarithmic, and exponential functions.
  - **Recommendation**: These students can be considered for a precalculus course or a nonrigorous course in beginning calculus.

- **95th Percentile**:
  - **Proficiencies**: This percentile corresponds to a total right score of about 103. These students can perform algebraic operations and solve equations with complex numbers. They can interrelate the concepts of exponents and logarithms, and demonstrate considerable understanding of the rules that govern the manipulation of logarithms and exponents. They have an understanding of trigonometric functions and their inverses. Ability is shown in solving trigonometric equations, manipulation of trigonometric identities, solving right triangle problems, and recognizing graphical properties of various other functions including absolute value, quadratic, and logarithmic functions.
  - **Recommendation**: These students should be considered for placement into calculus.

CPTs scores can play an important role in determining student course placement. The examples below use CPTs as the sole variable for placement recommendations and are used for illustrative purposes only. Actual placement decisions should include assessment of any other variables you deem necessary, such as high school grades, background information, etc. The data used in the examples were obtained from institutions that administer the CPTs.

The chart below suggests placement recommendations based on the three CPTs mathematics tests. In order of difficulty, these are Arithmetic, Elementary Algebra, and College-Level Mathematics. For the College-Level Mathematics test, the course scope and sequence at your institution should be considered.

Typical Mathematics Course Placement Rules

CPTs Test	Total Right Score	Course Placement
Arithmetic	< 35	Arithmetic I
	35-63	Arithmetic II
	>63	Elementary Algebra*
Elementary Algebra	<32	Arithmetic II or I**
	32-52	Elementary Algebra
	53-73	Intermediate Algebra
	>73	College Algebra*
College-Level Mathematics	<43	Intermediate Algebra**
	43-62	College Algebra
	63-69	College Algebra or Precalculus
	70-85	Precalculus
	86-91	Precalculus or Calculus
	>91	Calculus

* Courses for which a higher level CPTs mathematics test should probably be administered to seek a more definitive indication of ability.

** Courses for which a lower level CPTs mathematics test should probably be administered.

The chart below shows the same data as the prior chart except that percentile values have been added. The percentiles for College-Level Mathematics are based on the normative sample of CLEP students. They do not necessarily correspond to percentiles for students from any specific institution. The percentiles for the other two mathematics tests are based on the normative sample of New Jersey students.

Typical Mathematics Placement Ranges: Total Right Scores and Percentiles

Elementary Algebra Test		College-Level Mathematics Test		
Total Right Score	Percentile	Course Placement	Total Right Score	Percentile
		Calculus	92	86
		Precalculus or Calculus	91	86
			86	80
		Precalculus	85	79
			70	61
		College Algebra or Precalculus	69	60
			63	50
		College Algebra	62	49
74	62		43	24
73	61	Intermediate Algebra	42	23
53	43			
52	42	Elementary Algebra	Arithmetic Test	
32	13		64	40
31	12	Arithmetic II	63	39
			35	16
		Arithmetic I	34	15

Test Reliability

Reliability is the reproducibility of a test score. Students with essentially the same level of skills should obtain very similar test scores if the test is reliable. Similarly, a student taking the same test several times during a short period of time should also obtain essentially the same score.

To verify the reliability of CPTs adaptive tests, a series of simulation studies was conducted. Eighteen hundred hypothetical examinees took each test. Two hundred of these students had skill levels corresponding to a total right score of 30, 200 to a score of 40, and so on through a total right score of 110. The standard error of measurement (SEM) was obtained at each level. This figure is the variability of the scores, and provides an index of the accuracy of measurement of the test at that level. The following chart summarizes these SEMs. Complete tables appear on pages 71-74.

Reliability and Standard Error of Measurement (SEM) of the CPTs

Total Right Score	Reading Comprehension	Sentence Skills	Arithmetic	Elementary Algebra	College-Level Mathematics
110	3.8	4.0	3.6	4.7	4.0
100	6.3	6.8	6.4	7.7	6.2
90	7.8	8.2	8.2	9.5	7.3
80	8.6	8.8	9.4	10.4	7.9
70	8.9	8.9	10.0	10.5	8.2
60	8.6	8.5	9.8	10.2	8.1
50	8.2	7.8	8.9	9.5	7.8
40	7.5	6.3	7.7	8.0	7.4
30	6.7	4.1	6.4	6.0	7.0
Reliability Coefficient	**0.90**	**0.91**	**0.90**	**0.92**	**0.90**

Note that the variability of the standard error of measurement (SEM) of each test is fairly uniform across most score levels. Further, as scores approach the extremes of the score scale, the SEMs become smaller. A peaked conventional test would show much greater variability of measurement depending on the skill level of the examinee. The reliability coefficients shown in the table are at least as high as those obtained for the best available conventional tests that use more than twice as many questions as the CPTs.

A test-retest study, included in the separate CPTs Version 3.0 Background Readings, verifies the reliability of CPTs and indicates that practice from repeated testing has no significant effect on scores. Simulation studies are included in M. L. Stocking's **Two Simulated Feasibility Studies in Computerized Adaptive Testing**, available upon request.*

Test Validity

Direct evidence for the validity of a placement test requires examination of the test's relationship to external criteria representing students' skills in the domains measured. These criteria may include instructors' evaluations of students' skills, students' persistence in their courses, and end-of-course grades. Indirect evidence of validity is provided by the relationship between the test and other tests that are known to relate to such criteria.

Direct evidence of the validity of the CPTs comes from the data collected during the pilot period and from the experiences of institutions that depend on the CPTs. The separate publication, CPTs Version 3.0 Background Readings, contains several papers in support of the CPTs, including a monograph published by the League for Innovation in the Community College that reports the CPTs experience of Central Piedmont Community College (Charlotte, North Carolina), Miami-Dade Community College (Miami, Florida), and Santa Fe Community College (Gainesville, Florida). Another paper, prepared by Patricia Smittle of Sante Fe Community College, presents data on underprepared students and the CPTs. We highly recommend that you review these vital papers.

* College Board Computerized Placement Tests (CPTs), P.O. Box 6800, Princeton, NJ 08541-6800.

Indirect evidence for the validity of the adaptive test is provided by the program's own work with tests such as the **Descriptive Tests of Language and Mathematics Skills**, the **New Jersey College Basic Skills Placement Test**, and by the work of others with tests in these domains. We know that tests of basic skills are useful predictors of student ability to succeed in college courses. We also know that the computerized adaptive test yields scores that relate almost perfectly to scores on comparable paper tests, when the reliabilities of the measures are taken into account. Taken together, these two "knowns" indicate that the adaptive test provides valid measurement for use in college placement.

CPTs SOFTWARE OVERVIEW

The installation process and actual test procedures for CPTs are discussed in this chapter. More detailed information about these processes appears in your CPTs User Manual.

Installation

CPTs are supplied to you on 3-1/2 inch diskettes or 5-1/4 inch floppy disks. The software may be installed on individual computers equipped either with two diskette drives of the same size or with one diskette drive and a hard drive, or on a full-service DOS-supported local area network (LAN) of several computers. The program is designed to operate on IBM or fully compatible computers. Complete installation procedures are supplied to you, making comprehensive knowledge about microcomputers unnecessary. During installation, for example, you are prompted by CPTs for information such as the date and your password. The password screen is shown below to illustrate this process. A similar screen is used to request the date.

COLLEGE BOARD COMPUTERIZED PLACEMENT TESTS™

Please type your password and press ENTER:

— — — —

The tests you purchase may be installed or uninstalled on one or more computers. Additional tests can be purchased and installed at any time. The system automatically keeps track of the number of tests installed, the number used, and the number remaining, so that you can appropriately schedule your next order.

Menus are displayed on your screen to provide you with various options. The Install/Uninstall menu provides options that allow you to install or uninstall CPTs on a network, hard disk, or floppy disk. While CPTs can be operated on a computer having either a hard disk or two floppy disk drives, we recommend hard disk installation for Version 3.0 to take full advantage of all its enhancements. In addition to the options mentioned above, informational data may also appear on the menu. For example, on the installation screen, you are shown your institution name, the number of tests installed, the number of tests that have been

administered, the number of tests remaining, the current date, and the expiration date of your license. By selecting the appropriate option from the installation screen and following the instructions provided, a successful installation is ensured. This guide includes selected menus and other screens to familiarize you with their appearance and use. After installation is completed, you are presented with the CPTs **Main Menu**, as shown below:

COLLEGE BOARD COMPUTERIZED PLACEMENT TESTS™

Institution Name: Code:
Your Institution Name Here *xxxxxx*

Administrative Information CPTs Main Menu

Tests Installed:	75	1	**Administer Test(s)**
Tests Administered:	5	2	Create Reports
Tests Remaining:	70	3	Copy Scores to Floppy Disk
		4	Install/Uninstall Menu
Today's Date:	12-26-89	5	System Configuration Menu
Expiration Date:	01-01-91	6	Exit to DOS

Use the ↑ or ↓ arrow keys or the space bar to position the cursor.
Press <ENTER> to select. Press <Esc> to return to CPTs Main Menu

The six available options that appear on the right side of the screen permit you to perform the following functions:

- **Administer Test(s)** you have already installed
- **Create Reports** you require
- **Copy Scores to Floppy Disk** for use by the Computerized Placement Management Software, CPMS, to recommend placement into courses. This feature safeguards your test data by providing a backup copy. The Copyscores disks are also sent to ETS for future research on computer adaptive testing.
- **Install/Uninstall** allows you to install additional tests or to uninstall unused tests in order to move them to another computer.
- **System Configuration** is used to provide the CPTs software with specific information about the computer equipment you are using.

- **Exit to DOS** when you have completed using CPTs for the time being and wish either to use the computer for another purpose or to turn it off.

Upon installation, the **System Configuration** option is automatically presented to you. You may use this option, by selecting it from the main menu, whenever your requirements change. When you select this option, you will see the following screen:

```
COLLEGE BOARD COMPUTERIZED PLACEMENT TESTS™

Institution Name:                                  Code:
Your Institution Name Here                         xxxxxx

Administrative Information          System Configuration Menu

Tests Installed:      75            1 Set Hardware Configuration
Tests Administered:    5            2 Set Test Delivery Options
Tests Remaining:      70            3 Set Math Delivery Options
                                    4 Set Other Options
Today's Date:         12-26-89
Expiration Date:      01-01-91

  Use the ↑ or ↓ arrow keys or the space bar to position the cursor.
Press <ENTER> to select. Press <Esc> to return to CPTs Main Menu
```

The following four options appear on the right side of this screen:

- Set Hardware Configuration
- Set Test Delivery Options
- Set Math Delivery Options
- Set Other Options

Set Hardware Configuration is used to describe your computer hardware to the CPTs software. **Set Test Delivery Options** is used to tell CPTs which tests are to be administered and the order in which they are to be presented to the student. It also determines if reports will be printed and displayed on your screen, if background questions are to be asked, and if the responses to these questions will appear in the reports. **Set Math Delivery Options** allows you to use the Seamless Serial Testing feature of CPTs. This feature permits you to have CPTs administer the mathematics tests in a fixed, specified sequence; on the basis of responses to

standard background questions; or by using branching criteria. Branching criteria permit you to specify the scores that CPTs uses to automatically determine the next mathematics test to be given. (This was previously discussed beginning on page 22 in the **ABOUT THE TESTS** chapter.) **Set Other Options** allows you to specify your institution's name and college code.

Once you have installed CPTs and customized the system according to the needs of your institution, you are ready to administer the tests. This process is discussed in the next section. See your CPTs User Manual for more detailed information.

Test Preparation

The process of administering the tests begins with the test administrator logging onto the computer, supplying your institution's password to access the CPTs system, and obtaining the Main Menu shown at the beginning of this chapter. **Administer Test(s)** should then be selected from this menu. After this is done, the screen shown below appears:

COLLEGE BOARD COMPUTERIZED PLACEMENTS TESTS™

The maximum number of tests per examinee session is: 5

Administration order:

Reading Comp [3]
Sentence Skills [2]
Mathematics test(s) [1]

The testing session will:

Show On-screen Reports <Y>
Print Student Reports <Y>
Ask Background Questions <Y>
Print Background Results <Y>
Stop After Each Examinee <Y>

Maximum number of mathematics tests per examinee session : 3

Examinee starts mathematics:

With a specific test ( )
Based on Background (■)
Based on Examinee Choice ( )

Examinee continues mathematics:

Using a Fixed Sequence ( )
Using Branching Criteria (■)

Press <ENTER> to begin testing. Press <ESC> to return to CPTs Main

While this screen **cannot** be used to change the information shown, it does allow the test administrator to determine if CPTs is set up according to your institution's current testing needs. These items should be set as desired during system installation. If changes are ever needed, you can return to the Main Menu and select **System Configuration Menu** at any time. Then select **Set Test Delivery Options** to modify any of the options appearing to the left of the screen shown above. To change any of the mathematics options shown on the right side of the above screen, you must select **Set Math Delivery Options** from the **System Configuration Menu.**

The first student screen appears next. It is the screen with the picture of the [ENTER] key on it shown on the next page. From here on, the interaction with the computer is solely with the student. All necessary instructions and the tests themselves now appear on the screen. The test administrator should remain available to answer any questions and to handle any unforeseen problems. If **Stop After Each Examinee** is set to *Y* in the screen shown above, the student will receive a message at the completion of the tests to call the test supervisor. The supervisor will then use an "Escape" procedure* to prepare the system for testing another student or to end testing for that period. If **Stop After Each Examinee** is set to *N*, the system will automatically prepare to test the next student. Please refer to the CPTs User Manual for further details.

Copies of some of the screens from the actual administration of the tests are shown on the following pages.

* Press and release the [Esc] key, enter your password.

Test Administration

☞To facilitate the testing process, students should receive the CPTs Student Guide in advance of the testing session.

☞ If mathematics tests are to be administered, clean paper for scratch work should be supplied.

The first student screen is shown below:

COLLEGE BOARD
COMPUTERIZED PLACEMENT TESTS™
Computerized Adaptive Testing for College Placement

We will describe the purpose of this test and the questions you will be given, but first we will show you how to record your answers.

Find the ENTER key. It is a large key located toward the right of the keyboard; it looks like this

Press the ENTER key now.

The instructions on each screen are explicit and self-explanatory. To illustrate the testing process, several of the screens are now shown, each accompanied by a brief explanation. Typically, the student must follow the instructions provided and then go on to the next screen by pressing the [ENTER] key. The screen following the one illustrated above appears next:

Good. You will use the ENTER key to go from one set of instructions to the next.

The ENTER key is also used to enter your answer to a question and to confirm that the answer is the one you intended to give.

Press ENTER to continue

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The next screen shows the F1 function key that the student can use to obtain additional information or instructions during testing:

Now find the key with F1 on it. It may be on the left side of the keyboard, or it may be on the top. It looks like this:

F1

Use the F1 key if you need help. The computer will repeat instructions or give you more detailed instructions. Press the F1 key now.

The screen below is one of several the student encounters before actual tests are administered:

The purpose of this test is to help determine the reading, English, and mathematics courses most appropriate for you at this time. A report of your results will be given to you and to your college.

The information you provide will be kept at ETS for use in research related to the test. It will not be reported to anyone by ETS in a way that would allow you to be individually identified.

Press ENTER to continue

The next two screens are used to obtain the student's name and ID. These data must be entered correctly since they will appear on the reports. The student identification number (usually a Social Security number) is especially important and ***must be unique*** for each student. The CPTs and the CPMS use this number to identify and match data for students who may have participated in more than one testing session.

Now we will need some information about you.

Please type your last name, first name, and middle initial in the spaces below. Press ENTER after each part of your name. When you have completed all three parts you will be asked to press ENTER again to confirm your answer.

If you make a mistake, press the backspace key to correct it. The backspace key is above the ENTER key and has an arrow on it (←) pointing to the left.

_____ LAST NAME

_____ FIRST NAME

_ MIDDLE INITIAL (press ENTER if none)

Type your answer to the question. Then press the ENTER key.

Please type the student identification number assigned to you. (Usually this will be your social security number.) Use the backspace key to correct mistakes.

_____-____-_____ STUDENT IDENTIFICATION NUMBER

Type your answer to the question. Then press the ENTER key.

The student is now requested to supply his or her date of birth and major field of academic study he or she has chosen. If CPMS was installed using either the CGP or SDQ major field lists, as explained on page 12, entries from these lists must be chosen. **Each institution may modify these lists or create their own.** In any case, a valid major field must be entered.*

* The test administrator should supply the student with the appropriate list of codes from which to choose.

Type your date of birth in the space below.
Type the month, followed by the day, followed by the year.

Examples: type 12-26-70 for December 26, 1970
type 01-01-70 for January 1, 1970

Use the backspace key to correct mistakes.

____ - ____ - ____

Type your answer to the question. Then press the ENTER key

Type the code number of your major field of study. If you are undecided or do not know the code number, type 999.

_____MAJOR FIELD

Type your answer to the question. Then press the ENTER key.

At this time, the student is provided with information about the tests. The following screens are presented:

Most of the questions are multiple-choice questions. This means that you will be asked to choose among several possible answers.

To do this you will use the SPACE BAR. Find the SPACE BAR now. It is the long narrow bar at the bottom of the keyboard, just as on an ordinary typewriter.

Press ENTER to continue.

Select your answer by pressing the SPACE BAR until the marker is next to your choice. Here is an example.

8 + 3 =

▶ 9
11
13
15

Press the SPACE BAR five or six times and watch the marker move.

Now press the SPACE BAR until the marker is next to the correct answer. Press ENTER once to enter your answer and a second time to confirm that it is the choice you want to make.

Press the SPACE BAR until the marker is next to your answer. Then press the ENTER key.

After this practice screen, the following screens will be displayed:

We are now ready to begin the test.

You should understand that this is an "adaptive" test. Questions are chosen for you on the basis of your answers to previous questions. This allows the computer to give you questions that are neither too easy nor too hard for you, while limiting the test to the smallest possible number of questions. It also means that different students will be given different questions.

Press ENTER to continue

After you answer each question, the computer calculates a score based on all the answers you have given, and uses this score to select the next question to display. Because the test works this way, you must answer every question when it is first given. You cannot omit any questions or come back later to change an answer.

If you do not know the answer to a question, try to eliminate one or more of the choices. Then pick one of the remaining choices.

Press ENTER to continue

Take your time to think through the questions; there is no time limit on this test.

Remember that you can change your answer as often as you want until you have confirmed it.

Press ENTER to continue

Following these screens, the background questions will be presented to the student (if you have set up CPTs to do so). The background questions may consist of the standard set supplied with CPTs, your own questions, or a combination of both.

A message will now appear indicating that a test is about to begin. The sequence of screens from this point on will vary depending on the information used to configure CPTs. For example, the sequence of the tests can vary, the total number of tests and the number of mathematics tests will vary to reflect what you have specified, reports can be either displayed on the screen or printed, and the intervention of the test administrator may or may not be required to proceed to the next student. Each test will automatically follow the prior test in accordance with this information. Sample questions will precede each test to familiarize the student with the types of questions in that particular test.

When the student has completed all tests, the following report appears on the screen if CPTs has been configured to do so. While five entries are shown, only the actual tests administered will appear. If you configured the system to **Print Student Reports**, the Individual Student Report may be printed. You may both display and print if desired, as explained further in the **REPORTING** chapter beginning on page 53.

This completes the testing. Your scores are as follows:

TEST	PERCENTILE RANK
READING COMPREHENSION	60
SENTENCE SKILLS	53
ARITHMETIC	72
ELEMENTARY ALGEBRA	41
COLLEGE-LEVEL MATHEMATICS	32

A percentile rank of 60 on a test means that your score is higher than 60 % of a typical sample of students who completed the test. You will receive a printed report explaining your results more fully.

Please press ENTER to clear the screen

After all the tests for a student have been completed, and if you configured the CPTs to **Stop After Each Examinee**, the following message appears: **This completes the test. Please call the test supervisor.** The test supervisor may then prepare the system to administer tests to the next student, print reports, or follow the escape procedure to end testing.* Use of the escape procedure will cause a menu to display that lists the various options available to the test administrator.

* Press and release the [Esc] key, enter your password.

☞ During the administration of CPTs, the supervisor may need to skip to the next test or to the next candidate, or to end the session before it has been completed. The escape procedure may be used to display a menu that provides the appropriate options depending on the location within the system or on how far the student has progressed in the testing.

Copying Scores to Floppy Disks

A COPYSCORES utility program is used to copy your test data onto floppy disks. This procedure should be done for several reasons. First, a backup of important data should **always** be made. ***THIS CAN NEVER BE STRESSED ENOUGH!*** Second, the disks can be used to create the database from which placement reports can be generated. Third, the disks are supposed to be returned to Educational Testing Service for future research. Finally, by moving test data to floppy disks periodically, additional room can be made available on your hard disk.

REPORTING

CPTs allows you to produce three types of reports:

- Individual Student Reports
- Roster Reports
- Summary Reports

Each report may either be printed or displayed on your monitor. You may sort each report, except the Summary Report, by student last name or ID. You can also impose limits on the amount of data contained in each report. These limits may be specified by last name (e.g., Adams through Smith), by ID (e.g., 222-33-4444 through 555-66-777), or by test date (e.g., 01-01-90 through 06-30-90). You can also specify no limits, in which case all student records in the database will be printed or displayed.

A sample of each report is shown at the end of this chapter. A detailed discussion of the meaning of the data is presented beginning on page 29 in the **TEST SCORES** chapter. An overview of how the reports are created follows. Please see the CPTs User Manual for additional details.

The reporting system may be accessed from the CPTs by using the Main Menu. By selecting the **Create Reports** option, you will enter the reporting system where the following screen is presented:

COLLEGE BOARD COMPUTERIZED PLACEMENT TESTS™
Report Menu

1) Create, Update, and Maintain Report Data
2) Generate Individual Student Report
3) Generate Roster Report
4) Generate Summary Report
5) Return to Main Menu

Use the SPACEBAR or ↑ or ↓ to position the cursor.
Press ENTER to select or <esc> to exit menu.

The first option, **Create, Update, and Maintain Report Data**, is selected **automatically** by the system the first time you enter the reporting system. After that, the test supervisor must select this option to add more data to the reporting system. This option will convert the raw test data from the student log file, which was created when the tests were administered, into a reporting database.* Most institutions perform this conversion after each testing session. You may also merge data from several computers into a single reporting database. The procedure is simple; you need only to specify the drive with the floppy disk containing your data, or, if you are using a hard disk drive, the subdirectory containing your data. CPTs will tell you how many student records were processed and ask if you want to process more. The original data will remain in place until you delete them with another option available in CPTs.

After you have converted all your test data, you will be returned to the **Report Menu** shown above. You can then select any of the three report options. You can also return to the main menu by selecting the **Return to Main Menu** option. As explained above, you may sort the data in the reports and limit the amount of data by specifying your choices through menus. When you select one of the three limiting options, the bottom of the displayed menu requests the last names, ID numbers, or test dates by which you want to limit. These menus appear as follows. The second menu illustrates how limiting dates are entered.

Individual Student Report Menu
Where do you want the report printed?

1) Print on screen
2) Print on printer

How do you want the reports sorted?

1) Sorted by last name
2) Sorted by student ID

Use the SPACEBAR or ↑ or ↓ to position the cursor.
Press ENTER to select or <esc> to exit menu.

* The layout of the CPTs reporting database is in the **APPENDIX** on page 110.

Individual Student Report Menu
How do you want to limit reports?

1) No limit(s)
2) Limit by student's last name
3) Limit by student ID
4) Limit by test date

Please enter the range. Press ENTER when done:

Test date (mm-dd-yy) to begin with: 01-01-89
Test date (mm-dd-yy) to end with: 12-31-89

Sample reports are shown beginning on the next page.

Sample Reports

Beginning with the Individual Student Report*, the three reports produced by CPTs are illustrated below.

Individual Student Report

COLLEGE BOARD COMPUTERIZED PLACEMENT TESTS™

REPORT FOR: SIMS, ROBERT L.

ID: 735-93-8204 Birthdate: 12/13/66 Major: 118

TEST RESULTS	TOTAL RIGHT SCORE	RANGE	PERCENTILE RANK	TEST DATE
Reading Comprehension	116	114-117	99	01/04/90
Sentence Skills	118	117-119	96	01/04/90
Arithmetic	118	117-118	>93	01/04/90
Elementary Algebra	109	104-114	88	01/04/90
College Mathematics	92	85- 99	97	01/04/90

Each test you completed was chosen from a group of 120 questions. The TOTAL RIGHT SCORE shows how many of these you could expect to answer correctly if you took a test made up of all 120 questions.

Any test score is an estimate, not an exact measure of your skills. The RANGE tells you how accurate your score is. If you took a test a second time, you could expect your new score to fall somewhere within the RANGE that is shown.

The PERCENTILE RANK compares your score with the scores of typical entering college students who completed tests composed of similar questions. For example, a PERCENTILE RANK of 99 means that your score is higher than 99 percent of the students who completed the test.

Responses to Background Questions

Years studied English in high school: 4
Years studied Mathematics in high school: 4
Studied algebra in high school: Yes
Years since last mathematics course: 1
Sex: Male
Self description: Black or African American
English first language: Yes
Disabling condition: None
Father's education: Bachelor's degree
Mother's education: Bachelor's degree

* The Responses to Background Questions will appear in this report only if CPTs was configured by your institution to present these questions to the student and to have them print here.

Roster Report

COLLEGE BOARD COMPUTERIZED PLACEMENT TESTS™

ROSTER FOR: Acorn College

ROSTER OF: Total Right Scores

FOR: All Students

SORTED BY: LAST NAME

NAME	ID	READING COMP	SENTENCE SKILLS	ARITH-METIC	ELEM ALGEBRA	COLL MATH
BERTRAM, SHERMAN C.	290-34-8324	77	60	22		
CAIN, BETTY G.	173-54-9011	94	118	89	65	62
DAVIS, ELEANOR R.	349-98-4929	116	97	113	103	83
EDWARDS, JOHN N.	348-95-9483	94	71	82	43	
GARCIA, JAMES D.	894-83-9485	67	67	108	84	62
MADISON, SAMUEL F.	023-94-8305	109	118	114	92	71
MEYERS, ELIZABETH S.	384-95-8396	79	115		76	65
SIMS, ROBERT L.	735-93-8204	116	118	118	109	92
SMITH, ROGER M.	245-84-3211	65	43	80	32	
WILLIAMS, JOAN B.	534-39-4058	120	118	56	43	39

NUMBER OF STUDENTS PROCESSED: 10

Summary Report

COLLEGE BOARD COMPUTERIZED PLACEMENT TESTS™

SUMMARY REPORT FOR: Acorn College

REPORT OF: Total Right Scores

FOR: All Students

RANGE	READING COMPREHENSION	SENTENCE SKILLS	ARITHMETIC	ELEMENTARY ALGEBRA	COLLEGE MATH
116 - 120	2	8	4	5	1
111 - 115	1	9	6	6	3
106 - 110	2	15	9	7	2
101 - 105	8	12	8	5	3
96 - 100	16	12	4	5	5
91 - 95	10	13	7	6	4
86 - 90	15	9	4	5	6
81 - 85	21	13	6	2	6
76 - 80	12	10	12	2	7
71 - 75	7	4	10	5	8
66 - 70	7	3	7	2	7
61 - 65	8	2	7	3	7
56 - 60	7	5	7	4	6
51 - 55	4	8	6	2	5
46 - 50	2	3	6	13	5
41 - 45	3	3	5	9	3
36 - 40	2	2	9	18	4
31 - 35	3	0	4	12	1
26 - 30	2	0	3	10	0
21 - 25	0	0	6	9	0
16 - 20	0	0	0	0	0
11 - 15	0	0	0	0	0
6 - 10	0	0	0	0	0
1 - 5	0	0	0	0	0
TOTAL STUDENTS	132	131	130	130	83
MEAN SCORE	79.0	88.1	71.6	61.3	74.3
STD. DEVIATION	19.4	20.8	27.1	30.8	21.7

Additional Notes on Reporting

Besides creating the student reports through the reporting system as explained above, there are two other ways reports may be obtained. During the CPTs installation process, one of the screens that appears is shown below:

COLLEGE BOARD COMPUTERIZED PLACEMENT TESTS™

Set Test Administration Options

Enter the maximum number of tests per examinee session: 5

Enter administration order:		Select features for session:	
Reading Comp	[1]	**Show On-Screen Reports**	<Y>
Sentence Skills	[2]	**Print Student Reports**	<Y>
Mathematics test(s)	[3]	Ask Background Questions	<Y>
		Print Background Results	<Y>
		Stop After Each Examinee	<Y>

Press <F10> to save. Press <ESC> to return to CPTs Configuration Menu

If you indicate *Y* for **Show On-Screen Reports** (shown highlighted above), the student's percentile report will display on the screen immediately after the test is completed. This report appears as follows:

This completes the testing. Your scores are as follows:

TEST	PERCENTILE RANK
READING COMPREHENSION	60
SENTENCE SKILLS	53
ARITHMETIC	72
ELEMENTARY ALGEBRA	41
COLLEGE-LEVEL MATHEMATICS	32

A percentile rank of 60 on a test means that your score is higher than 60 % of a typical sample of students who completed the test. You will receive a printed report explaining your results more fully.

Please press ENTER to clear the screen

If you indicate *Y* for **Print Student Reports** (also shown highlighted in the Set Test Administration Options screen on the previous page), the **Individual Student Report** will print after each student has completed testing. A sample of this report is shown on page 56.

To appear in a report, at least one test must be completed by a student. If a student does not complete a test, but entered identification information and background questions (if used), these data will be saved by the computer and the student can return at a later time and enter his or her ID information to take a test. The original background data will then appear as usual on all reports.

Only the latest test data in a given category will appear on the CPTs reports. If a student takes all five tests, for example, and then repeats the Sentence Skills test a week later, the reports will show only the results from the last Sentence Skills test with the other four previous test results. This means that to track a student's progress, you should retain printed reports for each test series taken, keep separate computer files, or use CPMS, which has the facility to report all test scores.

STUDENT INFORMATION

To facilitate the testing process, students should be provided with as much background information as possible before being tested. The CPTs **Student Guide**, which is shipped with each order of CPTs, should be distributed to each student. Please feel free to reproduce this guide as necessary.

The Student Guide explains the purpose of the CPTs and contains sample questions and actual screens from the student sign-on procedure. It also presents clear explanations of the scores reported by CPTs (Total Right Score, Range, and Percentile Rank), discusses guessing on the tests, and recommends special accommodations for disabled students.

CPTs TOTAL RIGHT SCORES

to

PERCENTILE RANKS

Relationship of Computerized Placement Tests (CPTs) Total Right Scores to Estimated Percentile Ranks Among Entering College Students

The Computerized Placement Tests (CPTs) percentiles for Reading Comprehension, Sentence Skills, Arithmetic Skills, and Elementary Algebra refer to the group of 44,000 students who took the New Jersey College Basic Skills Placement Test (NJCBSPT) from February through September of 1986. All students entering state-supported colleges in New Jersey must take the NJCBSPT. The CPTs percentiles in this group were estimated by finding the NJCBSPT score corresponding to each CPTs score (generally not a whole number) and by using interpolation to determine its percentile.

For the College-Level Mathematics test, a simulation study was conducted based on a sample of 3,000 college students who took a College-Level Examination Program (CLEP) Mathematics Subject area test for college credit.

Tables of these scores appear on the following pages.

CPTs TOTAL RIGHT SCORES to PERCENTILE RANKS

Relationship of CPTs Total Right Scores to Estimated Percentile Ranks Among Entering College Students

CPTs Total Right Score	Reading* Comp	Sentence* Skills	Arithmetic* Skills	Elementary* Algebra	College-** Level Math
120	>99	>96	>93	97	>99
119	>99	>96	>93	97	>99
118	>99	96	>93	96	>99
117	>99	95	>93	95	>99
116	99	93	>93	94	99
115	99	91	>93	93	99
114	98	89	93	92	99
113	98	88	92	91	98
112	97	85	90	90	98
111	96	83	89	90	98
110	94	81	88	89	97
109	93	79	86	88	97
108	91	77	85	87	97
107	90	75	84	86	96
106	88	72	82	86	96
105	87	70	81	85	96
104	85	68	80	84	95
103	83	66	79	83	95
102	81	64	78	83	94
101	80	62	77	82	93
100	78	60	75	81	93
99	76	58	74	81	92
98	74	56	73	80	92
97	72	54	72	79	91
96	71	52	71	78	90
95	69	50	70	78	89
94	67	49	69	77	88
93	65	47	68	76	87
92	64	45	67	76	86
91	62	44	66	75	86
90	60	42	65	74	85
89	58	41	64	73	84

* Percentiles refer to 44,000 students taking NJCBSPT in 1986.

** Percentiles refer to 3,000 students taking CLEP Mathematics test for college credit.

CPTs Total Right Score	Reading* Comp	Sentence* Skills	Arithmetic* Skills	Elementary* Algebra	College-** Level Math
88	56	39	63	73	83
87	55	38	62	72	81
86	53	36	61	71	80
85	51	35	60	71	79
84	49	34	59	70	78
83	48	33	58	69	76
82	46	31	57	68	75
81	45	30	56	68	74
80	43	29	55	67	72
79	42	28	54	66	72
78	40	27	53	65	71
77	39	26	52	65	69
76	38	25	51	64	68
75	36	24	50	63	67
74	35	23	49	62	66
73	34	22	48	61	65
72	32	21	47	61	63
71	31	20	47	60	62
70	30	19	46	59	61
69	28	19	45	58	60
68	27	18	44	57	58
67	26	17	43	56	57
66	25	16	42	55	55
65	23	15	41	54	54
64	22	15	40	54	52
63	21	14	39	53	50
62	20	14	39	52	49
61	19	13	38	51	48
60	18	12	37	50	46
59	16	12	36	49	45
58	15	11	35	48	44
57	14	11	34	47	42
56	13	10	34	46	41
55	12	9	33	45	39
54	11	9	32	44	38
53	10	8	31	43	37
52	10	8	30	42	35

* Percentiles refer to 44,000 students taking NJCBSPT in 1986.

** Percentiles refer to 3,000 students taking CLEP Mathematics test for college credit.

CPTs Total Right Score	Reading* Comp	Sentence* Skills	Arithmetic* Skills	Elementary* Algebra	College-** Level Math
51	9	7	29	41	34
50	8	7	28	40	33
49	7	7	28	38	31
48	6	6	27	37	30
47	6	6	26	36	29
46	5	5	25	35	28
45	4	5	24	33	27
44	4	4	24	32	25
43	3	4	23	30	24
42	3	4	22	29	23
41	2	3	21	27	22
40	2	3	20	25	21
39	2	3	19	24	19
38	1	2	19	22	18
37	1	2	18	21	17
36	1	2	17	19	16
35	1	1	16	18	15
34	1	1	15	16	14
33	<1	1	15	15	13
32	<1	1	14	13	12
31	<1	1	13	12	11
30	<1	1	12	10	10
29	<1	<1	11	9	9
28	<1	<1	11	8	9
27	<1	<1	10	7	8
26	<1		9	6	7
25	<1		9	5	6
24			8	4	6
23			7	4	5
22			7	3	4
21			6	2	3
20			5	<1	2
19			<1		2
18					1
17					<1
16					<1
15					<1

* Percentiles refer to 44,000 students taking NJCBSPT in 1986.

** Percentiles refer to 3,000 students taking CLEP Mathematics test for college credit.

CPTs TOTAL RIGHT SCORES
and their
STANDARD ERRORS OF MEASUREMENT

Although the consistency with which scores are derived from a test is usually represented by the test's reliability, measures of reliability aggregate measurement error over all score levels. Lack of consistency, or measurement errors, for a test actually varies with score level in a systematic fashion that depends on the score level and the psychometric properties of the items that comprise the test. Item response theory provides us with a straightforward means of estimating the conditional standard error of measurement, i.e., the standard error of measurement at each score level. An item response model was used to produce the conditional standard errors of measurement in the following tables at each scaled score level for each of the CPTs.

CPTs TOTAL RIGHT SCORES and their STANDARD ERRORS OF MEASUREMENT

CPTs Total Right Score	Reading* Comp	Sentence* Skills	Arithmetic* Skills	Elementary* Algebra	College-** Level Math
120	0.00	0.00	0.00	0.00	0.0
119	0.40	0.40	0.40	0.50	0.4
118	0.80	0.90	0.80	1.00	0.9
117	1.20	1.30	1.10	1.50	1.3
116	1.60	1.70	1.50	2.00	1.7
115	2.00	2.10	1.90	2.50	2.2
114	2.40	2.50	2.30	2.90	2.6
113	2.70	2.90	2.60	3.40	3.0
112	3.10	3.30	3.00	3.80	3.3
111	3.40	3.70	3.30	4.30	3.7
110	3.80	4.00	3.60	4.70	4.0
109	4.10	4.40	4.00	5.10	4.3
108	4.40	4.70	4.30	5.40	4.6
107	4.70	5.00	4.60	5.80	4.9
106	4.90	5.30	4.90	6.10	5.1
105	5.20	5.60	5.10	6.40	5.3
104	5.40	5.80	5.40	6.70	5.5
103	5.70	6.10	5.70	7.00	5.7
102	5.90	6.30	5.90	7.30	5.9
101	6.10	6.50	6.10	7.50	6.1
100	6.30	6.80	6.40	7.70	6.2
99	6.50	6.90	6.60	8.00	6.4
98	6.70	7.10	6.80	8.20	6.5
97	6.90	7.30	7.00	8.40	6.6
96	7.00	7.50	7.20	8.60	6.7
95	7.20	7.60	7.40	8.80	6.8
94	7.30	7.70	7.60	8.90	6.9
93	7.50	7.90	7.70	9.10	7.0

* The conditional standard errors of measurement (SEM) were generated in a simulation study based on a sample of 3,000 college students who took the New Jersey College Basic Skills Placement Test.

** The conditional standard errors of measurement (SEM) were generated in a simulation study based on a sample of 3,000 college students who took a College Level Examination Program (CLEP) Mathematics subject area test for college credit.

CPTs Total Right Score	Reading* Comp	Sentence* Skills	Arithmetic* Skills	Elementary* Algebra	College-** Level Math
92	7.60	8.00	7.90	9.30	7.1
91	7.70	8.10	8.10	9.40	7.2
90	7.80	8.20	8.20	9.50	7.3
89	7.90	8.30	8.40	9.70	7.4
88	8.00	8.40	8.50	9.80	7.4
87	8.10	8.50	8.70	9.90	7.5
86	8.20	8.50	8.80	10.00	7.5
85	8.30	8.60	8.90	10.10	7.6
84	8.40	8.60	9.00	10.10	7.7
83	8.50	8.70	9.10	10.20	7.7
82	8.50	8.70	9.30	10.30	7.8
81	8.60	8.80	9.40	10.30	7.8
80	8.60	8.80	9.40	10.40	7.9
79	8.70	8.80	9.50	10.40	7.9
78	8.70	8.90	9.60	10.50	8.0
77	8.80	8.90	9.70	10.50	8.0
76	8.80	8.90	9.80	10.50	8.1
75	8.80	8.90	9.80	10.50	8.1
74	8.80	8.90	9.90	10.60	8.1
73	8.90	8.90	9.90	10.60	8.2
72	8.90	8.90	9.90	10.60	8.2
71	8.90	8.90	10.00	10.60	8.2
70	8.90	8.90	10.00	10.50	8.2
69	8.80	8.90	10.00	10.50	8.2
68	8.80	8.90	10.00	10.50	8.2
67	8.80	8.80	10.00	10.50	8.2
66	8.80	8.80	10.00	10.50	8.2
65	8.80	8.80	10.00	10.40	8.2
64	8.70	8.70	9.90	10.40	8.2
63	8.70	8.70	9.90	10.40	8.2
62	8.70	8.60	9.90	10.30	8.1
61	8.60	8.60	9.80	10.30	8.1
60	8.60	8.50	9.80	10.20	8.1
59	8.60	8.50	9.70	10.20	8.1
58	8.50	8.40	9.70	10.10	8.0
57	8.50	8.40	9.60	10.10	8.0

* The conditional standard errors of measurement (SEM) were generated in a simulation study based on a sample of 3,000 college students who took the New Jersey College Basic Skills Placement Test.

** The conditional standard errors of measurement (SEM) were generated in a simulation study based on a sample of 3,000 college students who took a College Level Examination Program (CLEP) Mathematics subject area test for college credit.

CPTs Total Right Score	Reading* Comp	Sentence* Skills	Arithmetic* Skills	Elementary* Algebra	College-** Level Math
56	8.50	8.30	9.50	10.00	8.0
55	8.40	8.20	9.40	9.90	8.0
54	8.40	8.20	9.30	9.80	8.0
53	8.30	8.10	9.20	9.80	7.9
52	8.30	8.00	9.10	9.70	7.9
51	8.20	7.90	9.00	9.60	7.9
50	8.20	7.80	8.90	9.50	7.8
49	8.10	7.70	8.80	9.40	7.8
48	8.00	7.60	8.70	9.20	7.8
47	8.00	7.40	8.60	9.10	7.7
46	7.90	7.30	8.50	9.00	7.7
45	7.80	7.20	8.40	8.80	7.6
44	7.80	7.00	8.20	8.70	7.6
43	7.70	6.80	8.10	8.50	7.6
42	7.60	6.70	8.00	8.40	7.5
41	7.50	6.50	7.90	8.20	7.5
40	7.50	6.30	7.70	8.00	7.4
39	7.40	6.10	7.60	7.80	7.4
38	7.30	5.90	7.50	7.60	7.3
37	7.20	5.70	7.30	7.40	7.3
36	7.20	5.50	7.20	7.20	7.2
35	7.10	5.20	7.00	7.00	7.2
34	7.00	5.00	6.90	6.80	7.2
33	6.90	4.80	6.80	6.60	7.1
32	6.80	4.50	6.60	6.40	7.1
31	6.80	4.30	6.50	6.20	7.1
30	6.70	4.10	6.40	6.00	7.0
29	6.60	3.80	6.20	5.70	7.0
28	6.50	3.60	6.10	5.50	6.9
27	6.40		5.90	5.30	6.9
26	6.30		5.80	5.10	6.9
25			5.70	4.90	6.8
24			5.50	4.70	6.8
23			5.40	4.50	6.8
22			5.30	4.30	6.7
21			5.10	4.10	6.7

* The conditional standard errors of measurement (SEM) were generated in a simulation study based on a sample of 3,000 college students who took the New Jersey College Basic Skills Placement Test.

** The conditional standard errors of measurement (SEM) were generated in a simulation study based on a sample of 3,000 college students who took a College Level Examination Program (CLEP) Mathematics subject area test for college credit.

CPTs Total Right Score	Reading* Comp	Sentence* Skills	Arithmetic* Skills	Elementary* Algebra	College-** Level Math
20			5.00	3.90	6.6
19			4.90		6.6
18					6.5
17					6.5
16					6.4

* The conditional standard errors of measurement (SEM) were generated in a simulation study based on a sample of 3,000 college students who took the New Jersey College Basic Skills Placement Test.

** The conditional standard errors of measurement (SEM) were generated in a simulation study based on a sample of 3,000 college students who took a College Level Examination Program (CLEP) Mathematics subject area test for college credit.

TABLES OF COMPARABLE SCALED SCORES

COMPUTERIZED PLACEMENT TESTS (CPTs) and the ORIGINAL DESCRIPTIVE TESTS OF LANGUAGE and MATHEMATICS SKILLS (DTLS/DTMS)

The correspondence between CPTs scores and DTLS/DTMS scores was determined in a score comparability study completed in November 1987. Approximately 200 students took each of the four CPTs sections then available (Reading Comprehension, Sentence Skills, Arithmetic, and Elementary Algebra) together with the corresponding original DTLS/DTMS test (Forms A and B). Approximately half of the students took the CPTs first and approximately half took the DTLS/DTMS test first. The correspondence between the two tests was determined separately for each of the CPTs using equipercentile scaling methods.

The tables that follow present the correspondences in both directions (i.e., CPTs to DTLS/DTMS and DTLS/DTMS to CPTs).

CPTs TO DTLS
READING COMPREHENSION
Table of Comparable Scaled Scores

CPTs	DTLS	CPTs	DTLS	CPTs	DTLS
120	25	88	18	56	9
119	24	87	17	55	8
118	24	86	17	54	8
117	24	85	17	53	8
116	24	84	17	52	8
115	24	83	16	51	7
114	23	82	16	50	7
113	23	81	16	49	7
112	23	80	15	48	7
111	23	79	15	47	6
110	23	78	15	46	6
109	22	77	15	45	6
108	22	76	14	44	5
107	22	75	14	43	5
106	22	74	14	42	5
105	22	73	13	41	5
104	21	72	13	40	4
103	21	71	13	39	4
102	21	70	13	38	4
101	21	69	12	37	3
100	21	68	12	36	3
99	20	67	12	35	3
98	20	66	12	34	3
97	20	65	11	33	2
96	20	64	11	32	2
95	20	63	11	31	2
94	19	62	10	30	2
93	19	61	10	29	1
92	19	60	10	28	1
91	18	59	10	27	1
90	18	58	9	26	1
89	18	57	9		

DTLS TO CPTs
READING COMPREHENSION
Table of Comparable Scaled Scores

DTLS	CPTs
25	120
24	117
23	112
22	107
21	102
20	97
19	93
18	89
17	86
16	82
15	79
14	75
13	71
12	68
11	64
10	60
9	57
8	53
7	50
6	46
5	42
4	39
3	35
2	32
1	28

CPTs SENTENCE SKILLS TO DTLS SENTENCE STRUCTURE
Table of Comparable Scaled Scores

CPTs	DTLS	CPTs	DTLS	CPTs	DTLS
120	25	89	16	58	9
119	25	88	16	57	9
118	25	87	16	56	9
117	24	86	15	55	9
116	24	85	15	54	9
115	23	84	15	53	8
114	23	83	15	52	8
113	23	82	15	51	8
112	22	81	14	50	8
111	22	80	14	49	8
110	21	79	14	48	7
109	21	78	14	47	7
108	21	77	14	46	7
107	20	76	13	45	7
106	20	75	13	44	6
105	19	74	13	43	6
104	19	73	13	42	6
103	19	72	12	41	5
102	19	71	12	40	5
101	19	70	12	39	5
100	18	69	12	38	4
99	18	68	12	37	4
98	18	67	11	36	4
97	18	66	11	35	3
96	18	65	11	34	3
95	17	64	11	33	3
94	17	63	11	32	2
93	17	62	10	31	2
92	17	61	10	30	2
91	16	60	10	29	1
90	16	59	10	28	1

DTLS SENTENCE STRUCTURE TO CPTs SENTENCE SKILLS
Table of Comparable Scaled Scores

DTLS	CPTs
25	119
24	117
23	114
22	111
21	109
20	106
19	103
18	98
17	93
16	89
15	84
14	79
13	75
12	70
11	65
10	61
9	56
8	51
7	46
6	43
5	40
4	37
3	34
2	31
1	28

CPTs TO DTMS
ARITHMETIC SKILLS
Table of Comparable Scaled Scores

CPTs	DTMS	CPTs	DTMS	CPTs	DTMS
120	125	86	122	52	116
119	125	85	122	51	115
118	125	84	122	50	115
117	125	83	121	49	115
116	125	82	121	48	115
115	125	81	121	47	114
114	125	80	121	46	114
113	125	79	121	45	114
112	125	78	121	44	113
111	125	77	120	43	113
110	125	76	120	42	113
109	125	75	120	41	113
108	125	74	120	40	112
107	125	73	120	39	112
106	125	72	120	38	112
105	125	71	119	37	111
104	125	70	119	36	111
103	125	69	119	35	111
102	125	68	119	34	110
101	125	67	119	33	110
100	124	66	119	32	110
99	124	65	118	31	109
98	124	64	118	30	109
97	124	63	118	29	108
96	124	62	118	28	108
95	124	61	118	27	107
94	123	60	118	26	107
93	123	59	117	25	106
92	123	58	117	24	106
91	123	57	117	23	105
90	123	56	117	22	105
89	123	55	117	21	104
88	122	54	116	20	104
87	122	53	116	19	103

DTMS TO CPTs
ARITHMETIC SKILLS
Table of Comparable Scaled Scores

DTMS	CPTs
125	104
124	98
123	92
122	86
121	80
120	74
119	68
118	62
117	57
116	53
115	50
114	46
113	43
112	39
111	36
110	33
109	31
108	29
107	27
106	25
105	23
104	21
103	19
102	19
101	19

CPTs TO DTMS
ELEMENTARY ALGEBRA
Table of Comparable Scaled Scores

CPTs	DTMS	CPTs	DTMS	CPTs	DTMS
120	225	86	217	52	209
119	225	85	217	51	209
118	225	84	217	50	209
117	225	83	217	49	208
116	224	82	216	48	208
115	224	81	216	47	208
114	224	80	216	46	208
113	224	79	216	45	207
112	223	78	215	44	207
111	223	77	215	43	207
110	223	76	215	42	207
109	223	75	215	41	207
108	222	74	214	40	206
107	222	73	214	39	206
106	222	72	214	38	206
105	222	71	214	37	206
104	222	70	213	36	205
103	221	69	213	35	205
102	221	68	213	34	204
101	221	67	213	33	203
100	221	66	212	32	203
99	220	65	212	31	202
98	220	64	212	30	202
97	220	63	212	29	201
96	220	62	212	28	201
95	219	61	211	27	201
94	219	60	211	26	201
93	219	59	211	25	201
92	219	58	211	24	201
91	218	57	210	23	201
90	218	56	210	22	201
89	218	55	210	21	201
88	218	54	210	20	201
87	217	53	209		

DTMS TO CPTs
ELEMENTARY ALGEBRA
Table of Comparable Scaled Scores

DTMS	CPTs
225	119
224	114
223	110
222	106
221	102
220	98
219	93
218	89
217	85
216	81
215	77
214	72
213	68
212	64
211	60
210	56
209	51
208	47
207	43
206	39
205	36
204	34
203	32
202	30
201	29

TABLES OF COMPARABLE SCALED SCORES

COMPUTERIZED PLACEMENT TESTS (CPTs) and the NEW JERSEY COLLEGE BASIC SKILLS PLACEMENT TEST (NJCBSPT)

The correspondence between CPTs scores and NJCBSPT scores was determined in a score comparability study, completed in September 1987, in which 224 students at five institutions took both tests. Half of the students took the CPTs first and the other half took NJCBSPT first. The correspondence was computed separately for each of the four sections of the test (Reading Comprehension, Sentence Skills, Arithmetic, and Elementary Algebra) then available. The correspondence was determined by standardizing the scores in both tests (i.e. expressing each score in terms of standard deviations above or below the mean) in this group of 224 students.

The tables that follow present the correspondences in both directions (i.e., CPTs to NJCBSPT and NJCBSPT to CPTs).

CPTs to NJCBSPT
READING COMPREHENSION
Table of Comparable Scaled Scores

CPTs	NJ	CPTs	NJ
120	182	72	157
119	182	71	157
118	182	70	156
117	182	69	155
116	181	68	154
115	181	67	154
114	180	66	153
113	180	65	152
112	179	64	151
111	179	63	150
110	178	62	149
109	178	61	148
108	177	60	147
107	177	59	146
106	176	58	145
105	176	57	144
104	175	56	143
103	175	55	142
102	174	54	141
101	174	53	140
100	173	52	139
99	173	51	139
98	172	50	137
97	172	49	136
96	171	48	135
95	171	47	135
94	170	46	135
93	170	45	135
92	169	44	135
91	169	43	135
90	168	42	135
89	168	41	135
88	167	40	135
87	167	39	135
86	166	38	135
85	166	37	135
84	165	36	135
83	165	35	135
82	164	34	135
81	164	33	135
80	163	32	135
79	162	31	135
78	162	30	135
77	161	29	135
76	160	28	135
75	160	27	135
74	159	26	135
73	158		

NJCBSPT to CPTs
READING COMPREHENSION
Table of Comparable Scaled Scores

NJ	CPTs
182	117
181	115
180	113
179	111
178	109
177	107
176	105
175	103
174	102
173	100
172	98
171	96
170	94
169	92
168	90
167	88
166	86
165	84
164	82
163	80
162	78
161	77
160	76
159	74
158	73
157	72
156	70
155	69
154	67
153	66
152	65
151	64
150	63
149	62
148	61
147	60
146	59
145	58
144	57
143	56
142	55
141	54
140	53
139	51
138	50
137	50
136	49
135	48

CPTs SENTENCE SKILLS to NJCBSPT SENTENCE SENSE
Table of Comparable Scaled Scores

CPTs	NJ	CPTs	NJ
120	181	72	156
119	181	71	155
118	180	70	155
117	180	69	154
116	179	68	153
115	179	67	153
114	178	66	152
113	178	65	152
112	177	64	151
111	176	63	151
110	176	62	150
109	175	61	150
108	175	60	149
107	174	59	149
106	174	58	148
105	173	57	148
104	173	56	147
103	172	55	147
102	172	54	146
101	171	53	145
100	171	52	145
99	170	51	144
98	169	50	144
97	169	49	143
96	168	48	143
95	168	47	142
94	167	46	142
93	167	45	141
92	166	44	141
91	166	43	140
90	165	42	140
89	165	41	139
88	164	40	139
87	164	39	138
86	163	38	137
85	163	37	137
84	162	36	136
83	161	35	136
82	161	34	135
81	160	33	135
80	160	32	135
79	159	31	135
78	159	30	135
77	158	29	135
76	158	28	135
75	157		
74	157		
73	156		

NJCBSPT SENTENCE SENSE to CPTs SENTENCE SKILLS
Table of Comparable Scaled Scores

NJ	CPTs
182	120
181	120
180	118
179	116
178	114
177	112
176	110
175	108
174	106
173	105
172	103
171	101
170	99
169	97
168	95
167	93
166	91
165	90
164	88
163	86
162	84
161	82
160	80
159	78
158	76
157	75
156	73
155	71
154	69
153	67
152	65
151	63
150	62
149	60
148	58
147	56
146	54
145	52
144	50
143	48
142	47
141	45
140	43
139	41
138	39
137	37
136	35
135	33

CPTs to NJCBSPT
ARITHMETIC
Table of Comparable Scaled Scores

CPTs	NJ	CPTs	NJ
120	181	69	165
119	181	68	165
118	181	67	164
117	181	66	164
116	181	65	164
115	180	64	163
114	180	63	163
113	180	62	163
112	179	61	162
111	179	60	162
110	179	59	162
109	178	58	161
108	178	57	161
107	178	56	161
106	177	55	160
105	177	54	160
104	177	53	160
103	176	52	159
102	176	51	159
101	176	50	159
100	175	49	158
99	175	48	158
98	175	47	158
97	174	46	157
96	174	45	157
95	174	44	157
94	173	43	156
93	173	42	156
92	173	41	156
91	172	40	155
90	172	39	155
89	172	38	155
88	171	37	154
87	171	36	154
86	171	35	154
85	170	34	153
84	170	33	153
83	170	32	153
82	169	31	152
81	169	30	152
80	169	29	152
79	168	28	151
78	168	27	151
77	168	26	151
76	167	25	150
75	167	24	150
74	167	23	149
73	166	22	149
72	166	21	148
71	166	20	148
70	165	19	148

NJCBSPT to CPTs
ARITHMETIC
Table of Comparable Scaled Scores

NJ	CPTs
181	117
180	114
179	111
178	108
177	105
176	102
175	99
174	96
173	93
172	90
171	87
170	84
169	81
168	78
167	75
166	72
165	69
164	66
163	63
162	60
161	57
160	54
159	51
158	48
157	45
156	42
155	39
154	36
153	33
152	30
151	27
150	25
149	23
148	20
147	19
146	19
145	19
144	19
143	19
142	19
141	19
140	19
139	19
138	19

CPTs to NJCBSPT
ELEMENTARY ALGEBRA
Table of Comparable Scaled Scores

CPTs	NJ	CPTs	NJ
120	190	69	169
119	189	68	169
118	189	67	169
117	188	66	168
116	188	65	168
115	188	64	167
114	187	63	167
113	187	62	167
112	186	61	166
111	186	60	166
110	186	59	165
109	185	58	165
108	185	57	165
107	184	56	164
106	184	55	164
105	184	54	163
104	183	53	163
103	183	52	163
102	182	51	162
101	182	50	162
100	182	49	161
99	181	48	161
98	181	47	161
97	180	46	160
96	180	45	160
95	180	44	159
94	179	43	159
93	179	42	159
92	178	41	158
91	178	40	158
90	178	39	157
89	177	38	157
88	177	37	157
87	176	36	156
86	176	35	156
85	176	34	155
84	175	33	155
83	175	32	155
82	174	31	154
81	174	30	154
80	174	29	153
79	173	28	153
78	173	27	153
77	172	26	152
76	172	25	152
75	172	24	152
74	171	23	151
73	171	22	151
72	171	21	150
71	170	20	150
70	170		

NJCBSPT to CPTs
ELEMENTARY ALGEBRA
Table of Comparable Scaled Scores

NJ	CPTs
190	120
189	119
188	116
187	114
186	111
185	109
184	106
183	104
182	101
181	99
180	96
179	93
178	91
177	88
176	86
175	83
174	81
173	78
172	76
171	73
170	71
169	68
168	66
167	63
166	61
165	58
164	56
163	53
162	51
161	48
160	45
159	43
158	40
157	38
156	35
155	33
154	30
153	28
152	25
151	23
150	20
149	20
148	20

GLOSSARY

Accuplacer — A software package from the College Board currently having three components: Computerized Placement Tests, Computerized Placement Management Software, and Placement Research Service.

Adaptive Testing — The capability of selecting subsequent questions on a test based on answers to prior questions.

Background Questions — Questions optionally administered as part of the CPTs and answered by the student. These include items such as mathematics experience, level of education, etc.

Boot — To prepare a computer system for use by loading an operating system. This usually occurs when your computer is turned on.

CLM — College-Level Mathematics test, one of the five test components in a standard set of CPTs.

CPMS — Computerized Placement Management Software. A software system by the College Board used with test results from CPTs and other data to recommend placement of students into courses.

CPTs — Computerized Placement Tests™. Currently includes a series of five tests: Reading Comprehension (RC), Sentence Skills (SS), Arithmetic (AR), Elementary Algebra (EA), and College-Level Mathematics (CLM).

Cut Score — The score at which placement is determined, i.e., a student scoring below the cut score would be placed into a lower level course. The score used by CPTs as a branching criterion for the administration of another test.

Database — A group of data comprising information you need. The CPTs reporting system and CPMS each create a student database.

Default — Pertaining to an attribute, option, or value that is automatically used with your software unless you

	specify otherwise. An example would be the branching criteria used in mathematics tests.
Directory	An area of your hard or floppy disk used to contain data or software. Subdirectory and directory are frequently used synonymously.
DOS	Disk Operating System. The software used by your computer to control all internal operations and interface with you or your programs.
Floppy disk	A magnetic storage medium to hold software and data. Your software comes supplied on either the 5-1/4 inch floppy disks or 3-1/2 inch diskettes.
Floppy Disk Drive	The device that reads from and writes to floppy disks.
Function Keys	Keyboard keys, each of which has a special function. The function keys are usually displayed on keyboards as F1, F2, etc.
Hard Disk	A storage device of your computer on which all software and data are stored. Usually internal to the computer but can be external.
Highlight	Selecting an option on a screen by making it stand out from the others.
Installation	The process of placing your CPTs software on your computer's hard disk so that you can use it, or the process of setting up your CPTs software to operate from two diskette drives.
Item response theory	A test theory based on a mathematical model for the probability that a particular examinee will make a correct response to a particular question. The probability of a correct response by each examinee to each question is calculated by the model, based on the examinee's ability level and the statistical characteristics of the question, such as difficulty and discrimination.
Major	The academic area of study of preference for the student.

Menu	A series of selections appearing on your screen. You select one of the options to perform a particular function.
Printer	A device that writes output data from a system onto paper.
PRS	Placement Research Service. A service used for assessing the effectiveness of placement tests and other predictors in performance in courses. One of Accuplacer's components.
Record	A group of information about a particular topic. A student record may contain test scores, answers to background questions, etc.
Report	A document generated by the software that can either be printed or displayed on your screen.
Root Directory	The first or highest-level directory on any disk drive. For example, C: or D: on a hard disk drive. See also subdirectory below.
Seamless Serial Testing	The ability of CPTs to automatically decide the sequence of mathematics tests to administer based on parameters set during installation.
School to College Placement Articulation Software Service	A component of Accuplacer that permits high school students to take the CPTs as early as the tenth grade. Currently undergoing field trials. Also known as PASS.
Screen	Your cathode ray tube (CRT) or what displays on it. Screens are often shown in this guide.
Software	Programs, procedures, rules, and any associated documentation pertaining to the operation of a system.
Subdirectory	Any directory below the root directory. See root directory above. Subdirectory and directory are frequently used synonymously.
System	A series of programs and files that together perform a group of functions. Your CPTs system provides immediate score reporting upon completion of testing.

APPENDIX

This **APPENDIX** includes the following sections:

- ☐ First Mathematics Test Selection Logic
- ☐ Standard Background Questions
- ☐ Samples of Locally Defined Background Questions
- ☐ Layout of CPTs Reporting Database

First Mathematics Test Selection Logic

The CPTs system can use answers to three of the ten standard background questions to decide which mathematics test the student should take first. This process is done when you indicate that mathematics testing should start **Based on Background**. Possible examinee responses to each of these three mathematics-related standard background questions, shown below, are used as explained in the following table.

Mathematics Background Questions:

2. What is the total number of years you studied mathematics in high school (grades 9-12)? Count less than a full year of mathematics as a full year, but do not count a repeated year of the same course as an additional year of study.

- One year or the equivalent
- Two years or the equivalent
- Three years or the equivalent
- Four years or the equivalent
- More than four years or the equivalent
- I did not take any courses in mathematics
- Omit

3. Did you study algebra for at least one semester in high school?

- Yes
- No
- Omit

4. How long has it been since you have taken a mathematics course or other formal mathematics training?

- Less than one year
- One to three years
- Four to six years
- Seven or more years
- Omit

The decision table, used by CPTs to determine the first mathematics test based on answers to these background questions, appears on the following page:

DECISION TABLE USED BY CPTs FOR FIRST MATH TEST

Question 3: Algebra at least one semester?	Question 2: Years of HS Math?	Question 4: Time since last math training?	First Math Test
Omit	None	Any response	AR
Omit	One	Any response	AR
Omit	Omit	Any response	EA
Omit	Two	Any response	EA
Omit	Three	Any response	EA
Omit	Four	Four to six	EA
Omit	Four	Seven or more	EA
Omit	More than four	Four to six	EA
Omit	More than four	Seven or more	EA
Omit	Four	Omit	CLM
Omit	Four	Less than one	CLM
Omit	Four	One to three	CLM
Omit	More than four	Omit	CLM
Omit	More than four	Less than one	CLM
Omit	More than four	One to three	CLM
Yes	None	Any response	AR
Yes	Omit	Any response	EA
Yes	One	Any response	EA
Yes	Two	Any response	EA
Yes	Three	Four to six	EA
Yes	Three	Seven or more	EA
Yes	Four	Four to six	EA
Yes	Four	Seven or more	EA

KEY FOR FIRST MATH TEST

AR = Arithmetic Skills, **EA** = Elementary Algebra Skills,
CLM = College-Level Mathematics

DECISION TABLE USED BY CPTs FOR FIRST MATH TEST

Question 3: Algebra at least one semester?	Question 2: Years of HS Math?	Question 4: Years since last math training?	First Math Test
Yes	More than four	Four to six	EA
Yes	More than four	Seven or more	EA
Yes	Three	Omit	CLM
Yes	Three	Less than one	CLM
Yes	Three	One to three	CLM
Yes	Four	Omit	CLM
Yes	Four	Less than one	CLM
Yes	Four	One to three	CLM
Yes	More than four	Omit	CLM
Yes	More than four	Less than one	CLM
Yes	More than four	One to three	CLM
No	Omit	Any response	AR
No	None	Any response	AR
No	One	Any response	AR
No	Two	Any response	AR
No	Three	Any response	EA
No	Four	Any response	EA
No	More than four	Any response	EA

KEY FOR FIRST MATH TEST

AR = Arithmetic Skills, **EA** = Elementary Algebra Skills,
CLM = College-Level Mathematics

Standard Background Questions

What is the total number of years you studied English in high school (grades 9-12)? Count less than a full year of English as a full year, but do not count a repeated year of the same course as an additional year of study.

- One year or the equivalent
- Two years or the equivalent
- Three years or the equivalent
- Four years or the equivalent
- More than four years or the equivalent
- I did not take any courses in English
- Omit

***What is the total number of years you studied mathematics in high school (grades 9-12)? Count less than a full year of mathematics as a full year, but do not count a repeated year of the same course as an additional year of study.**

- One year or the equivalent
- Two years or the equivalent
- Three years or the equivalent
- Four years or the equivalent
- More than four years or the equivalent
- I did not take any courses in mathematics
- Omit

***Did you study algebra for at least one semester in high school?**

- Yes
- No
- Omit

***How long has it been since you have taken a mathematics course or other formal mathematics training?**

- Less than one year
- One to three years
- Four to six years
- Seven or more years
- Omit

* These background questions are used by CPTs to determine the first mathematics test to be administered to the student if the system is so configured by the test administrator using this Seamless Serial Testing option.

What is your sex?

- Female
- Male
- Omit

How do you describe yourself?

- Native American, American Indian, or Alaska Native
- Black or African American
- Mexican American or Chicano
- Puerto Rican
- Other Hispanic, Latino, Central American, or South American
- Asian or Pacific American
- White (non-Hispanic) or Caucasian
- Other
- Omit

Is English the first language you learned?

- Yes
- No
- Omit

What disabling condition do you have, if any, that might affect the usefulness of your test scores as measures of your skills? (Select only one.)

- None
- Blindness or other visual impairment
- Deafness or other hearing impairment
- Paraplegia
- Learning disability
- Other neurological or orthopedic impairment
- Other
- Omit

What is the highest level of education completed by your father or male guardian?

- Grade school or less
- Some high school
- High school diploma or equivalent
- Business or trade school
- Some college
- Associate degree
- Bachelor's degree
- Some graduate or professional school
- Completed graduate or professional school
- Omit

What is the highest level of education completed by your mother or female guardian?

- Grade school or less
- Some high school
- High school diploma or equivalent
- Business or trade school
- Some college
- Associate degree
- Bachelor's degree
- Some graduate or professional school
- Completed graduate or professional school
- Omit

Samples of Locally Defined Background Questions

Following is a series of questions which pertain to your high school academic record and to the importance of a college education to you and your family. As your answers will be provided to your counselor or faculty advisor to assist him or her in guiding the planning of your program of study, it is important that you answer to the best of your ability.

Reason you are taking tests?

- Placement in Reading, English and/or Mathematics courses
- Re-test for placement in Reading, English and/or Mathematics
- Post-test to measure skills gained in Reading, English and/or Mathematics
- Omit

What is the total number of years you studied mathematics in high school (grades 9-12)? Count less than a full year of mathematics as a full year, but do not count a repeated year of the same course as an additional year of study.

- One year or the equivalent
- Two years or the equivalent
- Three years or the equivalent
- Four years or the equivalent
- More than four years or the equivalent
- I did not take any courses in mathematics
- Omit

Did you study algebra for at least one semester in high school?

- Yes
- No
- Omit

How long has it been since you have taken a mathematics course or other formal mathematics training?

- Less than one year
- One to three years
- Four to six years
- Seven or more years
- Omit

What is/was your high school grade point average (G.P.A.)?

- 3.5 - 4.0 (A)
- 3.0 - 3.4 (B)
- 2.5 - 2.9 (B-)
- 2.0 - 2.4 (C)
- 1.5 - 1.9 (C-)
- 1.0 - 1.4 (D)
- 0.0 - 0.9 (D-)
- No average
- Omit

The grade you received for the last math class completed in high school?

- A
- B
- C
- D
- F
- No grade
- Omit

Number of years of English completed in high school?

- None
- 1 year
- 2 years
- 3 years
- 4 years
- Omit

English course level completed in high school? (if more than one level, mark the last course level completed.)

- Honors
- College Prep.
- General
- Basic
- English as a Second Language (ESL)
- Other
- None
- Omit

Grade you received for the last English class completed?

- A
- B
- C
- D
- F
- No grade
- Omit

Number of years of science completed in high school?

- None
- 1 year
- 2 years
- 3 years
- 4 years
- Omit

The last science course you completed in high school with a grade of "C" or higher?

- Biology
- Chemistry
- Advanced Biology
- Physics
- Other
- None
- Omit

Number of years of foreign language completed (one language) in high school?

- None
- 1 year
- 2 years
- 3 years
- 4 years
- Omit

Foreign language of which you completed two or more years?

- French
- German
- Spanish
- Other
- None
- Omit

How long has it been since you attended school for the purpose of completing a diploma, certificate or degree?

- Currently in school
- Less than 1 year
- 1 - 2 years
- 3 - 4 years
- 5 years or more
- Omit

Has anyone in your immediate family (parents, brothers, sisters, spouse, or children) completed a college degree, A.A., B.S., etc.?

- Yes
- No
- Omit

How important is it to the persons closest to you that you are successful in college?

- Very important
- Somewhat important
- Not important
- Omit

How important is college to you?

- Very important
- Somewhat important
- Not important
- Omit

How many miles will you have to travel to reach campus (one way)?

- 1 - 5 miles
- 6 - 10 miles
- 11 - 15 miles
- 16 - 20 miles
- 21 - 25 miles
- 26 - 30 miles
- 31 or more miles
- Omit

Layout of CPTs Reporting Database (STUDENT.DBF)

Field	Field Name	Type	Width	Decimal
1	FIRST_NAME	Character	20	
2	MID_INIT	Character	1	
3	LAST_NAME	Character	20	
4	ID	Character	9	
5	BIRTHDATE	Date	8	
6	MAJOR_CODE	Character	4	
7	BACKGROUND	Character	20	
8	SCORE1	Numeric	5	1
9	SCORE2	Numeric	5	1
10	SCORE3	Numeric	5	1
11	SCORE4	Numeric	5	1
12	SCORE5	Numeric	5	1
13	STD_ERR1	Numeric	4	1
14	STD_ERR2	Numeric	4	1
15	STD_ERR3	Numeric	4	1
16	STD_ERR4	Numeric	4	1
17	STD_ERR5	Numeric	4	1
18	PCTILE1	Character	3	
19	PCTILE2	Character	3	
20	PCTILE3	Character	3	
21	PCTILE4	Character	3	
22	PCTILE5	Character	3	
23	DATE1	Date	8	
24	DATE2	Date	8	
25	DATE3	Date	8	
26	DATE4	Date	8	
27	DATE5	Date	8	
TOTAL			183	

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